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SOCIAL INSURANCE AND THE MEDICAL PROFESSION *

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It is seldom that I have accepted an invitation to speak on social insurance with such enthusiasm and alacrity as the one that came from your committee. For over ten years I have devoted my leisure hours to propaganda in favor of social insurance measures in this country, and I look with a great deal of satisfaction to the change of public attitude toward what when my studies began was considered an idle dream or a revolutionary measure, but has now reached the dignity of an immediate program for most progressive organizations. During all these years it has been my hope that the interest and enthusiasm of the medical profession might eventually be enlisted in the cause. It is not only because I am the proud possessor of a medical diploma, although its use has long been discarded, but mainly because of a deep-seated conviction that there is no other class in this country which might contribute so much to the sound development of social insurance as the medical profession. Unfortunately, the practice of medicine is so exacting that the busy practitioner finds but little time to devote to the study of social problems. In the initial stages of the development of social insurance the medical profession did not play any significant part. But the fact that inquiries are beginning to come in represents a very hopeful sign of the times, even if it be true that those inquiries have been largely started by the economic effects of social insurance measures on the physician's own well-being.

Within the limited time at my disposal it would be unwise to try to present the economic theories which underlie the modern movement for social insurance, but its social significance can be made plain in a few words. Its purpose is no less than abolition of destitution in modern society, not at some distant future, but under the very conditions in which we live at present. It is but a large part of the broad world movement for conservation of human health and happiness, for which the medical profession has done so much in the past and will do so much more in the future.

That the insurance method is well adapted to prevent human distress resulting from certain unfortunate occurrences is an idea quite familiar to the American public. Life insurance has done a great deal to mitigate economic results of death of the bread-winner in the middle classes, and fire insurance has almost abolished that vast amount of human suffering which conflagrations cause, especially to society of lower economic levels. But the greatest amount of human destitution, with which perhaps no other group of people is so familiar as the ordinary every-day practitioner of medicine, is not caused by fire and not even by normal death. Physicians need not be told what the usual causes of human destitution are. They meet them in their every-day experience of visits to the homes of working men and women: widowhood and orphanage on account of premature death resulting either from accident or disease; enforced idleness due to acute diseases or lingering chronic ailments, or permanent deterioration of physical vigor due to old age, and finally all those economic disturbances of our social fabric which make it impossible even for the perfectly healthy and able man to obtain a purchaser for his labor. These are the complaints that must necessarily reach you day in and day out, and all of them are conditions in which you must be interested not only as citizens but also and very largely as members of the medical profession.

Without reading any sentimental descriptions of how the other half lives, the average physician knows that the standard of the wageworker's family is often on the margin of poverty; that the surplus in the weekly or annual balance sheet is but a rare exception and is very readily absorbed by the very first emergency arising from any cause. Without taking any courses of study on labor problems, physicians know that the housing conditions and the working conditions are in most cases unsatisfactoty and present predisposing factors toward poor health with all its resulting economic effects; that in the vast majority of families their savings, if any, are so small that the first case of lingering illness or unemployment may bring even a seemingly prosperous family on the verge of destitution. In short, the pressure of the high cost of living on one side and the natural, inevitable desire for a higher standard on the other have destroyed any substantial margin between the workman's income and outgo. The resulting economic equilibrum is so unstable that any unexpected happening may throw any workingman's family below the poverty line.

NATURE OF SOCIAL INSURANCE

Social insurance as it has developed throughout the civilized world within the last three decades is an organized movement to prevent the destruction of wage-working families as consuming units by any of the ordinary emergencies of modern day existence. It recognizes that through the method of insurance, or the method of distribution of individual losses through larger numbers of individuals, the effect of such acci-

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dental occurrences may be very largely alleviated. As fire insurance, by dividing the loss from fire among thousands of its insured, may prevent any one of them from becoming impoverished, so accident insurance may help those who suffer from industrial accidents, and sickness insurance may take care of families afflicted by chronic or acute illness.

So far the theory of social insurance does not by one iota differ from the general scientific principles of insurance as a whole. The one substantial difference is the recognition that the importance of some sort of provision is very much greater when we are dealing with the masses of wage-workers, that insurance here ceases to be a matter of individual concern and becomes the concern of organized society or the state. Whether or not all the handsome suburban homes of Garden City or Long Beach are to be insured against fire may be something for the individual owners of those homes to decide for themselves. We know quite well that ownership of valuable property carries with it the necessary recognition of the advantages of security and insurance as well as the ability to pay for such security. I take it that the burning of a private mansion does not represent a serious social problem beyond the individual suffering that its owners might be subjected to. But whether the millions of wage workers in this country are or are not to be insured against consequences of industrial accidents or occupational disease is a matter of the gravest importance to society at large.

The millions of wage-workers are often unwilling and still more frequently unable to bear even the distributed alleviated burden which insurance represents. Social insurance, therefore, means a good deal more than simply social concern in popularizing the insurance methods created by independent effort. It means the establishment of national or public institutions to help and encourage the various forms of insurance which the workman needs for protection against the various hazards of his existence. It means even more than that. It means the willingness of the social body to assume a substantial part of the cost of insurance, to assume a part of the burden which otherwise the wage-working class must carry on its own shoulders. It frequently means that disregarding the time-honored notions of personal responsibility and freedom, the social organism may compel and enforce insurance even against the desires of the individual so that he and his family may be protected against his own poor judgment.

Briefly, this has been the theoretic basis on which social insurance has developed in this country and to a much larger extent in Europe. If you try to imagine the difference between the German or British workmen definitely protected through some system of insurance against loss from industrial accidents or disease or invalidity or old age, and the American workmen to whom any one of these dangers means total breakdown of the economic status of his family, except for industrial accidents in a few of the states during the last two or three years, you will appreciate what social insurance has accomplished in some countries and what it may accomplish in all others, and that even the higher wages of American labor do not sufficiently compensate for the absence of these systems in this country.

So much public attention has been attracted by the recent compensation movement since 1911 that perhaps few physicians have failed to learn of its existence. In Europe accident compensation has been in actual practice for the last thirty years, and it may be safely said that by this time there is no corner of the civilized world left, with the exception of possibly some twenty American states, where some system of compensation for industrial accidents has not been established. Important as this movement has been, another one of much greater interest to the medical profession is arising — that for some systematic organization of sickness insurance, of which in the very next few years undoubtedly a good deal more will be said than has been said in the past. That, too, is an accomplished fact in most of the important European countries. Germany, Austria-Hungary, Great Britain, Norway, even Russia and Servia, have had for some time national systems of compulsory sickness insurance for the wage-working classes, and in other countries in which progress perhaps has not been so great, substantial subsidies are given from the national treasury or from the municipal funds to encourage and stimulate voluntary sickness insurance among wage-workers.

In all of the countries enumerated it is an accomplished fact that not only the wage-workers themselves, but also the employers and the public at large share in the cost of curing and alleviating illness. Some countries have gone far beyond that and have established compulsory systems of insurance against old age and invalidity, while others, such as Denmark, Great Britain, and many of its colonies, have tried to meet the problem by granting gratuitous old-age pensions to persons over a certain age, in recognition both of the economic need of the superannuated men and women and the social justice of providing for persons in the declining years following a life of useful toil. The technical methods used in organizing this vast body of remedial legislation are varied and complex. Technical experts may go on discussing the details from the point of view of legislative efficiency, but experts have never created the force which must exist behind every broad social movement. In America we have made only the first few weak steps on the road toward systematic treatment of such social diseases as poverty and destitution. Important as the gathering of accurate information may be, I have always felt that the great need of the times is to create a general recognition of the serious aspects of the problem and the possibility of meeting it by appropriate means. If we can only get enough enthusiasts clamoring for social insurance, the careful experts to work out the detailed problems will not fail to appear. We have accomplished something in that we have succeeded in passing compensation acts in twenty or twenty-five states of this Union within the short period of three years, but it is necessary to remember that perhaps half of the country still remains unconverted, and that far more important than the question of accidental industrial injuries which represent a serious economic danger in only a comparatively slight number of industries, there is the entire problem of the economic losses through disease, old age and unemployment.

I have heard one of our prominent sociologists, who is also a firm adherent of the Darwinian theory, argue that the policy of social insurance as advocated by us, resulting in assistance to and preservation of the unfit, would lead to deterioration of the human race by abolishing natural selection; but what the prominent sociologist has disregarded is the enormous preventive value, the improvement of general health conditions which may be accomplished by abolishing economic want, and furthermore, that the wasteful method of

natural selection of improving the race by sacrificing thousands is utterly inapplicable to present conditions of existence of the human race, which gives us scant surplus for the action of the selective process. Argue as much as we may against neo-Malthusian theories, the plain fact remains that future improvement of the race is possible only through the preservation of the individual rather than his sacrifice to the type.

WORKMEN'S COMPENSATION

The discussion until now has been rather abstract and general. It is inevitable because of the broad outlines of the subject that I am asked to treat. Coming down to the specific aspects of the movement as it is known to Americans at present, one large branch of social insurance has left the domain of theory. The accident compensation movement affects the medical profession in a great many different ways. It has created a great many different problems which many physicians are forced to face. In meeting a member of the medical profession, I quite naturally expect to have questions in regard to accident compensation thrown at me. Now, there are two ways or rather two points of view from which this question may be discussed before physicians, and these two points of view may be characterized briefly as the economic and the social ones. I am forced to state regretfully that as yet the economic problems, or rather the way in which accident compensation affects the economic interests of the physician, have been paramount. Far be it from me to deny the complete right of the medical profession to protect its economic interests, to further the economic standing of the profession or the trade. I have been too long affiliated with the labor movement of this country to deny any profession or trade the full right to aspire to a fair remuneration for its efforts. But it seems to me that nevertheless this is not or should not be the only point of view from which accident compensation should interest the medical profession; that not only as citizens should they retain a general interest in the social results of this new type of legislation; not only should they balance these social results at least to some extent against their own trade interests, but that they should go even beyond that and study and help in the solution of the social problems of compensation just because they are representing the one profession which is most capable of doing so.

In short, the relation between compensation and the physician may be studied from two points of view, first as to what the compensation has done or will do for the medical profession, and second as to what the medical profession can and will do for compensation.

ECONOMIC POINT OF VIEW

Let us begin with the first aspect of the case, the professional or trade interest, which is simpler and more easily disposed of.

Compensation has created a large additional demand for the services of the physician and surgeon. Perhaps two millions of accidents of greater or lesser severity occur annually in this country. Almost all of them require some medical or surgical aid, from first aid only to very prolonged treatment in some cases. Before the advent of compensation, comparatively few workmen could afford to command all the necessary medical aid.

As the accident meant the loss of wages, most of them were forced to crowd hospitals and dispensaries in quest of gratuitious treatment; a good many applied questionable home remedies of their own, and others went to their family physicians, swelling the percentage of uncollectable bills.

With the recognition of the employer's duty to furnish medical aid (which holds true to a greater or lesser degree in all the compensation acts, except those of Kansas and Washington, as far as I remember), all this has changed. Moreover, not only has the amount of work increased, and the amount of gratuitous work and uncollectable bills decreased, but the rate of remuneration has also materially improved.

Try as you may, it it difficult to disassociate wholly the terms of pay for medical practice from the principle of "what the traffic will bear." It is based on the elemental fact that medical aid is not a luxury but a prime necessity—all must have it and all cannot afford to pay the same or even a fair price for it. To put it bluntly, the traffic may bear a higher charge when employers, or industry, or in the final analysis the entire community has been charged with the burden.

That is what compensation has done for you, gentlemen, and being practical Americans you will admit that it is not a small matter for you. How are you going to react to these new conditions?

This new demand for your services, this new source of income, has placed new duties on you, some of a negative, and others of a more important constructive character. There is one great "don't" that must be announced emphatically, though, perhaps, it is not altogether a delicate or pleasant subject to dwell on. The physician must not make the mistake of trying to "make a good thing out of it." Because I happen to be employed by a casualty company writing compensation insurance, my statement concerning this should not be misunderstood. I beg to point to a decade of work for true standards of social insurance before I ever dreamed of any connection with the casualty business.

It is true that in the vast majority of cases your bills for treatment of injured wage-workers are paid by casualty companies, and in the remaining cases by more or less prosperous employers, that neither the casualty company nor the employers will be brought to financial ruin by an unreasonable medical bill. But the force of economic tendencies is great. The cost of medical aid, as the entire cost of compensation, is not borne by the casualty companies who must collect in premiums what they are required to pay out in losses, and who necessarily compute the entire cost of medical aid and add it on; it is not even borne by the employers who will necessarily endeavor to shift this cost on the consuming public. Not for a moment will I dispute the claim that the medical profession is entitled to a fair remuneration for the services it renders. I am not here to protect the interests of casualty companies, or even of the public or the community at large, which still continues to put a higher valuation on the services of prize fighters and baseball players than its educators or healers. But I do plead for the rule of reason in medical bills, because in the final analysis the interests of the toiling masses demand it. The provisions of American compensation laws, in regard to medical aid, are bewildering in the variety and the extent of liberality, from total denial of it in Washington and Kansas, as already stated, up to full treatment for ninety days without limit of cost, as in Wisconsin; limit two weeks in Massachusetts, to four weeks in Illinois, and so on.

In interest of proper care, all time limits are undesirable; but they have been brought about by a fear, let

us hope exaggerated, of the figure to which medical bills may grow. It is the usual size of medical bills charged to casualty companies, for minor cases, which has caused very limited and unsatisfactory provisions for medical aid in several states. There can be no question that the physician is worthy of his hire, but it is also true that the injured workman is still a workman and that the standards of payment derived from practice among prosperous families, with its accompanying waste in waiting for visits, should not be applied to the treatment of injured wage-workers.

A fee schedule agreed on after proper consultation with physicians is absolutely necessary, and should receive the cordial support of the profession.

There is perhaps another "don't" of lesser importance which may be mentioned. It fortunately does not apply to the entire medical profession but only to a few on the fringe, and that is in regard to the physician's part in the development of malingery.

Even before the compensation movement had resulted in many acts in this country, the cry of malingery arose. I was not one of those who raised it. Repeatedly on the pages of the *Survey* and elsewhere I protested against the implication that the effort of society to do some modicum of justice to the injured workmen and their families would result in making the American people a people of cheats and liars. Nevertheless it is useless to deny that a certain stimulus to malingery and fraud lurks hidden in the provisions of the compensation act. It is wrong to exaggerate it, but it is equally wrong to disregard it altogether. In my own experience I have met a few cases of this kind, though not so many by far as some enemies of compensation would want us to believe. Physicians in Europe have done a good deal to call public attention to this evil; perhaps they have exaggerated its extent. In telling these often unpleasant truths the medical profession has performed a valuable public service. But it is impossible to disregard the fact that in almost all cases of flagrant malingery a share of the responsibility falls on some member of the medical profession whose crime in the worst cases, and these fortunately are few, is that of deliberate collusion and fraud, and in many cases a certain weakness and misapprehension as to the moral duties of the physician toward his patient.

Not for a moment should this sense of professional duty rise above the duty to the social organism as a whole, and surely it is not socially desirable that the tremendously important step toward constructive social policy should suffer from a charge of destroying the workingmen's sense of self-reliance and independence. Even beyond the temptation to outspoken malingery, there is the danger of encouraging the excessive neurotic diathesis.

Far more important than compensation of a week or two to the injured wage-worker is the preservation and stiffening of his moral backbone. It is the duty of the medical profession as a whole to take a very definite attitude against those few of its members who are forgetful of their social duty.

In many more cases this encouragement of exaggeration by the physician is entirely involuntary. Workman's compensation has put new requirements on the physician. In addition to the surgical and medical judgment a new economic judgment is required. The healing of the injury is often an entirely different matter from the entire restitution of earning capacity. Many years' experience with accident reports and physicians' certificates have convinced me that this economic judgment is largely lacking, and that expert medical opinion in the important problem as to the exact time of permissible return to work is often highly unsatisfactory.

As a matter of fact, the judgment is too optimistic more frequently than otherwise. In perhaps 75 per cent. of the cases the physician's estimate as to the probable duration of disability falls far short of the actual duration of disability. Compensation has done away with many legal technicalities of the liability law which were a valuable asset to hundreds of attorneys, but in its stead it has created a large demand for expert medical opinion which I fear is not as yet always met with uniform degree of success. Nor is an unbiased diagnosis and prognosis all that the physician must furnish.

The acceleration of economic recovery has acquired a definite commercial value. The work of Zander institutes in Germany is an indication of how much the medical profession can contribute to the cause of human conservation.

An indirect result of compensation is the stimulus it must give to the work of prevention, a line of endeavor largely neglected in this country until now. As far as accident prevention is concerned the field is open for the inventive genius of the American engineering profession. For many years our engineers were too busy constructing gigantic buildings and intricate machinery to pay much attention to reducing the toll in human life and limb.

Even so it has been suspected that physicians took more pride in inventing new operations, rather than in preventive work. But while the causation of industrial accidents is not within the province of medical science, there is an equally important field of inquiry in connection with industrial diseases. Already in one or two states these diseases have been included under the compensation act by judicial decisions, and thus have opened a large field for diagnosis, prognosis and prevention. But as yet the American medical profession has paid comparatively slight attention to them. The splendid work done by many physicians in the domain of industrial hygiene must not be disregarded. But it still remains true that similarly important work was done by non-medical investigators.

Compensation is to-day an accomplished fact. Only five years ago it was but a hope. To-day the first steps are taken in this country for a system of sickness insurance. I venture to make the prophecy that once started, the movement will proceed at even a greater rate of speed.

In December, 1912, the American Association for Labor Legislation, encouraged by the progress made with accident compensation, provided for a special national committee on social insurance. During the greater part of two years this committee of leading authorities on the subject has been working on a plan for compulsory health insurance in America. The work has progressed to the point where it may be confidently expected that a bill will be introduced in some of the state legislatures in 1915.

The economic ravages of industrial accidents are picturesque and attract attention, but ordinary prosaic every-day sickness presents a still greater problem. If a dollar and cents measurement is required, it is enough to point out that the cost of sickness insurance in Germany is $100,000,000 a year as against $40,000,000 spent for accident relief. On the same basis a

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national system of sickness insurance in this country would represent an annual amount of about $300,000,000. Of this amount, it may be confidently expected that nearly one-half will be spent for medical aid, medical supplies and hospital treatment, and yet I venture to hope that this will not be the only point of view from which the American medical profession will consider sickness insurance.

SOCIAL POINT OF VIEW

It scarcely seems worth while to argue the social significance of a comprehensive sickness insurance system to an assembly of physicians. It is not only that the medical profession knows from its own observation the amount of destitution that exists; it is not only a sentimental appeal for relief of human suffering, but it is because no one is better able to judge than is the physician what an important factor poverty represents both in causing disease and in preventing its proper treatment and cure. Whether in dispensary practice or even in the homes of the tenement population, the physician simply cannot fail to feel the entire hopelessness of medication and advice unless supported by substantial improvement in the general hygienic conditions and economic well-being of the family. One might as well try Christian Science or absent treatment as to advise good nourishment, fresh air or rest where the illness of the wage-worker also means the complete stoppage of income and perhaps an immediate dropping below the line with necessary appeals to public or private charity. No one better than the physician knows how totally unnecessary is the largest share of illness surrounding us, how easily it could be met by proper conditions of living or working, and what a depressing effect these conditions must have on the development of the human race. Sickness and poverty stand in a relation of a vicious circle to each other; sickness causes poverty through the interruption of income, and the cost of medical treatment. Poverty causes sickness through lack of good food, good lodgings, through ignorance and neglect of personal hygiene, through destruction of mental rest. Only with the help of a strong shears can this circle be cut, and of its two blades, one spells sufficient medical aid, and the other necessary economic assistance.

I shall not venture to make any guesses as to which of the two blades is of greater importance. Affluence alone will not cure pneumonia or an ingrown toe-nail, but no one better than the attending physician knows the utter futility of drugging the sick man when other conditions are unfavorable.

If the medical profession is at all conscious of its social function, its unqualified support of the comprehensive plans for sickness insurance should be a matter of course. Experience has shown, however, that this has not always been its attitude in the matter. American physicians have heard of the attitude of the British medical profession during the introduction of the British national health insurance act (perhaps the greatest piece of constructive social legislation that Great Britain has passed as yet), and of the constant quarrels between the German physicians and their sick-insurance funds.

So far as the arguments between the British medical profession and Lloyd-George concerned the financial terms for rendering medical service, or the strikes of the German physicians aimed at exacting a somewhat higher rate of pay, I will cheerfully admit that the views of the physicians deserve a hearing. After twenty years' active participation in the labor movement, I am not here to deny to any trade or profession the right of organized effort to improve conditions of employment. Even here, however, the peculiar social character of the medical profession must guide at least its methods of trade-union attack. Above all it must not be forgotten that the employer in this aspect of the labor struggle is the working class with its own low standard, that in distinction to accident compensation, the largest part of the burden falls on the workers themselves. Workingmen seldom deny the necessity of a higher standard than their own for the physician who serves them, but they can hardly be blamed if they are not ready to admit that this normal standard includes automobiles, a retinue of servants and membership in exclusive clubs.

Even in this financial fight the medical profession may be misguided. The famous British economist Sidney Webb points out, for instance, that as yet the physicians were the greatest beneficiaries of the insurance act, having a guaranteed source of income as against the speculative character of private practice among the poor. Moreover, this aspect of the problem need perhaps cause less worry to physicians in America than in any other country. The American people are used to a liberal scale of medical fees. Nothing illustrates it better than the medical fee schedules adopted in some compensation states. It is true that the conditions of remuneration as established by numerous lodges in the East, or by the so-called 10-cent medical organizations, appear as a threat of what a further extension of collective medical aid may bring. But the medical profession may meet these undignified forms of contract in one way only—by supporting and cooperating with the rapidly growing movement for organized sickness insurance, rather than opposing it.

Far more harmful is the tendency shown by British physicians, and which may be noticed here, to fight this movement in principle. Most physicians look with apprehension on any inroads into the field of private practice; hence the silent opposition to extension of hospital facilities and the noisy opposition to dispensaries and 10-cent doctors.

In this the medical profession is hopelessly behind the times. In its worst phase private medical practice is medically from twenty-five to fifty years behind the present status of medical science and surgical skill. In its best phase it is a luxury, which like automobiles or private yachts can be purchased only by the selected few.

The socialization of medical service has been wofully delayed, as compared with many other functions of far lesser importance, but at last it is on its way. The purpose it must accomplish is twofold—improvement in quality and cheapening of cost. These purposes cannot be easily accomplished in face of an obstinate opposition from the medical profession.

PROBLEMS

The technical problems arising in connection with the relation between a sickness insurance system and the medical profession are many and complex. It is quite impossible for me to treat of them in detail in the present article. I can do no better than recommend the splendid monograph by an English student, Mr. I. G. Gibbon, entitled "Medical Benefits," to the consideration of any one interested. Whether the millions of individuals protected by the sickness insurance system be granted the right of selecting their physician

(on the preposterous theory that the patient may be the proper judge of the physician's ability, a theory retained from private practice because individual successes have often been built on it) or whether the physicians be selected by persons qualified to judge, as are physicians of hospitals, or members of other professions of equal importance; whether the remuneration of the physician be in the form of a regular salary, as is done in some German cities, and in the so-called Zemstvo medical service of Russia (perhaps the greatest organization of medical aid that the civilized world has seen as yet), or whether it should be computed in proportion to the visits the doctor succeeds in making, as in Leipzig, or in proportion to the number of permanent clients he succeeds in attracting as in England, or whether he should perhaps be remunerated in inverse proportion to the amount of medical aid he is forced to give, as the Chinese are supposed to do — all these are questions in which the medical profession should and will be heard. No one of the advocates of sickness insurance in this country for a moment intends to force an entirely new system of medical aid organization down the throats of the American people. It is recognized that habits and customs of the people change but slowly. But the unmistakable tendency is toward better organization. The present methods are admittedly inefficient and wasteful. An exclusive curio shop on Fifth Avenue may profitably wait a whole day for a single customer and make him pay all the overhead charges for that day. A popular department store must be built on a more economic utilization of capital and labor.

The workingman cannot afford to pay for the time the physician wasted as well as the time he worked. The workingman needs the expert specialist, not the expensive one. It is admitted that the active physician should work at least as hard as does the engineer, the teacher or the statistician. The preposterous charges for expert surgical aid are sometimes defended on the grounds that operations are few and far between. At the same time there are thousands who must be pauperized because operations are too costly. With proper organization of medical aid, such as only a national system of sickness insurance can give, when a physician has a normal working day and does not waste his time in senseless waiting or useless riding, and will command only reasonable but certain remuneration, when the antiquated pretense of omniscience will be abolished and the physician will not be ashamed to admit his ignorance of some things, or prohibited from announcing his expert knowledge of others, then and only then will the medical profession cease to be a speculative profession with splendid prizes to a few, very few, and sad disappointments both financial and ethical to the majority.

For what are the plain unadorned facts? The recent report of the United States internal revenue office disclosed the existence of about 357,000 incomes over $3,000 a year in this country. Let us allow for a certain amount of tax dodging. The preliminary estimates of the federal government assumed about 425,000 taxable incomes. Let us add incomes over $2,500 and assume an entire million families over that level. It still remains true that these represent less than 5 per cent. of the twenty odd million families in this country. And outside of that small group the cost of efficient medical aid (that is, the only kind worth having) in a case of serious illness is either prohibitive, or ruinous, or at least a serious hardship. The fortunate individuals who furnish medical and especially surgical aid to the selected few may prosper and pocket their handsome fees without any throbbing of their hearstrings. But the conscientious physician who is forced to cater to the millions cannot help recognizing that frequently the fee which he should receive is required by the patient for the purchase of necessary food or care. If he happens to know, as he often must, that his visits are altogether ineffectual except for the moral effect, that knowledge for any one with a social conscience must be very bitter. That he needs the fee to meet the bills does not seem to me to be any social answer at all.

There is only one way to meet this economic and ethical problem which has as yet been devised; a system of insurance which meets the economic loss of illness at least half way, and a system of organized medical aid which reduces its cost substantially without pauperizing the patient or degrading the physician. Social insurance against sickness meets both these problems and it has therefore become a world-wide movement. The medical profession can fulfil the time-honored glorious oath of Hippocrates by giving to it a modern broad social content and by helping instead of hindering the development of social insurance.

My brief experience with the practice of medical arts, though discontinued over a decade ago, has left me with sufficient professional pride to make me hope and believe that such will be the attitude of the American medical profession.

The American people have been criticized as suffering from the childish conceit of the half-grown. European institutions have been ridiculed or discarded, sometimes with what seemed insufficient cause. The American physician was perhaps the first to recognize how young and inexperienced we were here, and how much we could learn from Europe. Within the last twenty years or so the childish American conceit has fortunately given way. Slowly at first, and faster as time went on, we learned to see ourselves as others see us, and have found wherein we were deficient. In a great many things we are still behind, but in some things our progress has been almost phenomenal. Our New York compensation law, for instance, will bear comparison with the best in Europe, and is vastly superior to that of England. Our great American universities may be equaled by few outside of Germany. Our children's courts have been imitated everywhere throughout the world. In many lines of social legislation, as in mothers' pensions, we are teaching a lesson to Europe. Our theory and practice of scientific social work is vastly superior to similar European efforts.

A solid foundation for a new national pride is rapidly developing. Let us hope that in the development of social insurance we shall find in the American physician not the stubborn opponent that the British medical profession has been, but an enthusiastic ally, and thus once more prove that in social ethics we are able and willing to rise above European standards.

Making a Peaceful Life.—Remember that in life you ought to behave as at a banquet. Suppose that something is carried round and is opposite to you. Stretch out your hand and take a portion with decency. Suppose that it passes by you. Do not detain it. Suppose that it has not yet come to you. Do not send your desire forward to it, but wait till it is opposite to you.—*The Encheiridion.*

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A METHOD OF OBTAINING DENTAL SERVICE IN HOSPITALS BY THE APPOINTMENT OF INTERNS *

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NEW YORK

In 1901 and 1902, the first dental department of a clinic or hospital in New York City was established in St. Bartholomew's Clinic at 215 East Forty-Second Street. This has had a continuous existence up to the present time. The organization and direction of the dental service was carried on by Dr. J. Morgan Howe.

Shortly after this Dr. John W. Brannan, the president of the Board of Trustees of Bellevue and Allied Hospitals, suggested the establishing of a dental service in Bellevue Hospital. This seemed a good suggestion. In the first place, it appeared that a weak point in the chain of resistance to the inroads of disease was the lack of intelligent care of the mouth and teeth, and the opportunity to be associated with this great emergency hospital offered excellent conditions for putting into execution plans which might show that no satisfactory attempt could be made at prevention of disease without considering and including the oral cavity and its contents. With the cooperation and assistance of Dr. Brannan, we set about securing a staff for Bellevue Hospital. In arranging for a permanent dental staff we tried as far as possible to avoid the conditions that seemed sure to arise, and did arise within a short period. The dental profession was divided into two camps: those who favored all dental service of this type being paid for by some one, either the city, institution, or through charitable donations, and those who favored the dentists giving their services as the physicians did. It seems probable that those who favor the payment of the dentist for his services in this charitable work are largely in excess of those who do not; and feeling that this question would arise sooner or later, we endeavored to steer a middle course.

Our plan was as follows: In hospitals in which physicians gave their services the dentists should do likewise, but in turn the dentist should receive due recognition and be appointed on the same basis and with practically the same title as the physician in a corresponding department in medicine or surgery. The dentists had their titles conferred as in the surgical and medical departments. For instance, there was a director of the dental service at Bellevue. There was created a staff of visiting dentists, who represented the older and more experienced men, and a staff of assistant visiting dentists, who represented the younger class more recently graduated; and these were appointed with the understanding that they serve a specific time, weekly or monthly. It is usual for the visiting dentists to come every two weeks or once a month, and for the assistant visiting dentists to serve one or more afternoons per week; besides this, there was eventually, after two years or so of experiment, established a dental intern who lives at the hospital, associates with the medical and surgical interns, and is retained on exactly the same conditions as the other interns, receiving a certificate at the end of his service.

I have had those interested in other hospitals approach me in regard to establishing dental departments for them, but with the exception of Bellevue I have not found those who were willing to give a man the full honor and position due him unless he had the M.D. as well as the D.D.S. This attitude would prevent dental service in most hospitals.

The plan adopted at Bellevue was extended to the Allied Hospitals, one by one; first to Harlem, then to Fordham, then to Gouverneur, with the exception that up to the present time there has not been an intern appointed at any of these Allied Hospitals. Gouverneur is, however, at present, actively engaged in the attempt to secure an intern. It seems probable from our experience at Bellevue that the addition of an intern to the other hospital staffs will double, or more than double, the efficiency and quantity of service that can be obtained from a dental staff in a given time. This is due to the fact that there is somebody at the hospital at all times not only to attend to emergency cases as they come in, but also to arrange and so distribute the work that there is a greater conservation of time and less waste in waiting and arranging for various things. Last, but not least, in this plan of service is the question of a nurse assigned to the dental department.

At the original inception of the dental service, social service nurses, who were under no particular authority, were furnished, but this proved decidedly unsatisfactory and undesirable. Later one of the regular nurses in the hospital was appointed to serve in this department. Practically all of the regular nurses who have served have been deeply interested in the work, and they are enthusiastic, with the result not only that their service in the department of cleaning instruments, caring for the patients, sterilizing implements and arranging supplies has been of the very greatest assistance, but also that their assistance in obtaining patients from the wards with the least expenditure of time, and the keeping of the accounts and records has been of such a character as to entitle the nurses to a good share of the credit for the success of the dental service.

To establish and obtain a successful dental service in an organized public or private hospital the following things are necessary: the dentists must be men willing to sacrifice some of their time in public service and who have a sincere belief in the usefulness and beneficence of their work. They must be regular in their service. The managers or board of directors of the institution must be in sympathy with the work, willing to assist in every way possible and willing to overlook the many shortcomings that are bound to develop on the part of the dentists from lack of experience. There should be also general medical directors or superintendents who are sympathetic with and desirous of using the dental service to the limit of its possibilities for the welfare and upbuilding of the hospital.

An idea of the value of the dental service to Bellevue may be given in instances of record. The service is arranged so that those who shall be first received are the children of the various wards; and it is within the province of the dental department to retain the patients in the hospital until such service as they deem necessary shall have been obtained by the patient. There are at present on the staff of Bellevue and Allied Hospitals no less than twenty-eight or thirty dentists. A goodly part of these serve comparatively

* Read before the Section on Stomatology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

regularly, as may be seen from the following report of the services rendered last year.

At Bellevue Hospital there was given, in time, by the staff, 1,998—practically 2,000 hours. There were attended to in this one hospital alone by the dental department, 1,161 children and 1,142 adults. There were performed altogether, including major and minor operations, which run from mere treating of a carious tooth with an inflamed pulp to operations for necrosis and carious bone, and the setting of fractured mandibles—5,956 operations. In Harlem Hospital, where the work is carried on entirely by a staff of women dentists, in charge of a woman dentist, there were 231 children attended to and 19 adults. The operations here represented something over 600. At Fordham Hospital, where the staff is comparatively small, there were 154 children attended to and 78 adults. The number of hours put in by this staff was 141, and there were performed a total of 874 operations. The dental service at Gouverneur had not been organized fully a year at the time of this report, Dec. 31, 1913—and yet here, with a comparatively small staff, there had been attended to altogether 451 individuals, and there had been performed, from April 1 to December 31, 700 operations—a pretty good service for part of a year.

As an economic proposition, let us see what Bellevue has accomplished in one department only of the dental service as a money saver for the city of New York. Fractures of the jaw, and major treatments of this kind, run about 100 per year in the dental service. Previously all fractures had to be sent elsewhere or else put in the ward and the patients bandaged; there had to be a nurse in regular attendance and the patient had to be cared for, housed and fed for a period extending from five to ten weeks. One may estimate for oneself the cost per patient to the city under these conditions. After the establishment of the dental service there was equipped a dental laboratory sufficiently complete to make vulcanite and metal splints for fracture cases and for doing various other mechanical things that might be demanded in the dental service of any well-equipped office. When patients are sent to Bellevue now with a fractured jaw, they are as soon as possible taken to the dental department, an impression is taken and a splint is made and placed in the mouth. This can usually be done in from one to three days. As soon as the splint is in place, if the injuries are not such as to make it impossible for the patient to go about his usual vocation, he is permitted to return to his occupation at once, coming back to the hospital two or three or four times a week for observation and cleansing. The difference between keeping a patient from five to ten weeks, with a nurse in constant attendance, and keeping one three or four days and allowing him to leave, in the matter of expense is very great, and the economy must be credited to the dental department. I venture to say that the city of New York has been saved considerably more on its fracture cases alone by the dental department than the entire dental service has cost from the beginning to the present time, to say nothing of the improved conditions that have obtained for the patient and the amount that has been saved to patients because of their ability to return to their occupations, within a very few days. Add to this the probable certainty that the dentist will set a fractured jaw so that there will be a proper occlusion after the bone has healed, and you have a very simple but strong argument in favor of the establishment of dental service in a hospital. But this subject would require a paper in itself and I will confine myself to the executive part of the work.

I think that the foregoing statement has shown that if the dentist is given due consideration and authority equal to the responsibility placed on him, it is not impossible to establish a useful and successful dental service in a general or emergency hospital.

There are of course conditions and circumstances which make it impracticable to obtain dental service on this basis, and there are arguments on the side of the men who advocate that dentists shall be paid for their service wherever it is rendered, by somebody or in some way, and experience leads me to believe that circumstances alter cases and that one has to use judgment as to which of these methods one will apply to a given case. At Bellevue and Allied Hospitals the methods described have worked out extremely well. I do not consider that the dentist as yet realizes the necessity of being responsible and regular in his service to the extent that he should, but conditions are improving in this direction.

At St. Bartholomew's it was impossible to get a dental staff on any other than a paying basis. Even then, under the direction of a man who was not recognized by the dental profession, the service gradually ran down and became a failure. Later the service had to be reorganized, and it was found necessary to continue the practice which had been established of paying for the dental service. The payments are not high, in fact they are ridiculously small, but they are sufficient to assist young men who are anxious to spend part of their time in establishing a practice and willing to spend the other part to secure enough to give them a small income as a certainty. Therefore it is not hard work to secure a fairly high class of young men in this service.

If a salary is paid, we can demand certain hours, that the dentist practice along the lines that those in authority wish, and closer supervision and a greater authority can be exercised. The result is that the work can be greatly expedited and the energies utilized may be and are greatly conserved. Although comparisons are invidious and often misleading, the following will show what I mean:

At Bellevue the intern may be said, in a sense, to receive at least some return for his services. None of the visiting or assistant visiting dentists, or the director of the service, receives anything, so that if a man feels, for any reason, that it is impossible for him to be at the hospital at the time he is supposed to be, without much compunction he fails to appear. It requires considerable effort sometimes to impress on them the necessity of appearing regularly. Patients are often brought into the dental department ready for dental service, only to find that the expected assistant visiting dentist does not appear. This is annoying to everybody, besides being a great waste of energy, and costing in loss of time and inconvenience.

At Bellevue, with a staff of twelve, it has been pointed out, the operations performed last year totaled 5,956, which is without doubt an unusually good showing, as evidenced by the number of hours, practically 2,000, which were put in by the staff of Bellevue Hospital alone.

At St. Bartholomew's clinic, with but two men on the staff besides the director, who does no work at the chair, one working every afternoon from 2 until 5, and one two evenings a week, they attended to 5,009

persons and performed over 7,500 operations. This was because the men had to be there, furnish a substitute, or lose their salary, which acts as a strong incentive to keep a man at his work. I am satisfied with both methods that have been described, and believe that, with discretion, either may be used successfully.

I have frankly told those desiring to establish dental service in a hospital, who were unwilling to appoint dentists on the same basis and give them the same standing as the medical attendants, that I saw no other way but to pay a salary. I myself would advise any dentist against serving in a hospital where his recognition was not as complete as that of physician, unless he serves for pay, and that is his own affair. I am not sure but that a small stipend or salary paid to a man (and this would perhaps hold good in the medical and surgical departments) would enable us sufficiently to control those giving the service, so that the work might be directed in a way to save time. It is not impossible that this might serve to make it cheaper in the long run to have a paid service.

This is not intended as an argument either way on this subject. It is a matter that will have to be worked out by experience. I am, however, of the opinion that whether or not it be a paid service, some method whereby it is possible to insist on men's serving the time they say they will is essential in order to obtain the most efficient and desirable results.

560 Fifth Avenue.

ABSTRACT OF DISCUSSION

DR. W. C. FISHER, New York: This paper proves conclusively what I contended two years ago was necessary in order to get proper dental service in hospitals. Dr. Flanagan of Springfield, Mass., read a short paper before this Association in 1912 on the need of a dental staff attached to hospitals, and in the discussion the question was constantly asked, how could this best be accomplished? Dr. Brown of Milwaukee did not believe proper services could be obtained in a hospital of any size except through internships, and that dental service should be paid for the same as medical service is paid for; that the real work of the hospital was done by men attached to that hospital, under the supervision of more experienced men, and that the dental intern should be there constantly also.

DR. R. H. IVY, Philadelphia: In 1900 an oral surgical staff was appointed at the Philadelphia General Hospital. There were four men appointed, two of whom held the dental degree, the other two both medical and dental degrees, and they were all received on equal footing with the medical members of the staff of the hospital. One year later, in 1901, two interns were appointed in that hospital on an equal footing with the other interns of the hospital and under the direction of the visiting staff, and it was decided at a meeting of the medical staff that all cases of mouth conditions and many cases in which the mouth was responsible for the general condition, should be turned over to them for treatment. This plan worked so well that there have been two dental interns on the hospital staff continuously since that time, the dental men working always in harmony with the medical men and belonging to the society of the residents of the hospital. This year the same plan is being carried out in the Episcopal Hospital. A resident dental surgeon on an equal footing in every way with the medical residents has been appointed and has been given a splendid equipment to perform all kinds of dental and oral surgical operations. It is now being contemplated to increase the number of dental interns in the Philadelphia Hospital so as to have two on duty to care exclusively for the tuberculous patients, it being deemed desirable to keep these patients separate from the others in regard to dental treatment.

DR. M. H. CRYER, Philadelphia: I would like to add to what Dr. Ivy has said, that the four members who form the oral surgical staff give clinics for eight months in the year on Saturdays, and they for some reason have the largest clinics given in the city of Philadelphia. The average attendance for the past winter from the various dental and medical schools was 350. On some occasions we had as many as 450 students and practitioners at these clinics. The city of Philadelphia also gives a certificate to those who attend 80 per cent. of the clinics, and these certificates are signed by the oral surgical staff, the Director of Public Health and Charities, and the city seal of Philadelphia is placed on the certificates. These certificates have become so popular in foreign countries that they stand higher to-day than the university degree, because they are signed by an official of the city and bear the seal of the city. When a graduate goes to a European country, he is asked where he has attended his lectures and what degrees he has. When he answers that he has the University degree, the Philadelphia Dental College degree, or the Medico-Chirurgical College degree, they ask, "Have you a certificate from the Philadelphia General Hospital? We consider that better than any other degree." That is what we have been doing in Philadelphia since 1900.

The dental interns in the Philadelphia General Hospital (Blockley) are appointed in this way: At the clinics and lectures announcement is made that two interns will be appointed each year, and that Dr. Roe, Dr. Russell and myself will be glad to receive applications from students wishing these positions. The students making application are specially watched during the senior year of their course. These men are required to make a certain class of splints and do other operations up to a certain standard, after which they are passed on by the faculty of one of the three schools, and then passed by the state board. Then the applications are gone over by Dr. Roe, Dr. Russell, and myself and we decide which men we will appoint as interns. They are then recommended to the Director of Public Health of the city and he makes the appointments. These men serve one year, and if their service is satisfactory and they wish to continue, they are allowed to serve another year. The dental interns belong to the Intern Society which has been in existence for many years, and they are received on an equality with the medical interns, and the oral surgical staff members belong to the medical board of the hospital. This has been going on since 1900, and the plan has been adopted by other countries—France, Italy, Spain and others—and in 1904 the government of Spain sent Dr. Aguilar to Philadelphia especially to see what we were doing there in taking care of the mouths of some five thousand patients in the City Hospital.

DR. T. L. GILMER, Chicago: I have been a member of the medical board of St. Luke's Hospital, Chicago, for twenty years, and Dr. Black is also similarly connected with the same hospital. We are there on exactly the same basis as are the other members of the staff. We are designated as oral surgeons. I think this is a good time to work for extension of the service to include dental interns in hospital work, since it is now recognized by physicians in general that the mouth infections play an important part as a primary factor in the etiology of infections in different parts of the body. The mouth foci must be eradicated before patients can be cured of heart, joint, or other lesions, which may be secondary manifestations of the mouth focus. Much of the work, especially the strictly dental part, may be done by the dental interns, relieving the oral surgeons of much of the less important service which is imposed on him at the present time.

DR. M. I. SCHAMBERG, New York: It is gratifying to hear the report of the appointment in Philadelphia of interns as a matter of priority over New York. However, in Philadelphia you have one hospital which has interns, while in New York, through the efforts of Dr. Wheeler, we have many which have adopted the internship plan. While hearing this paper it has aroused my desire to ask for a dental intern in our institution, for the reason that I frequently request that many of the fracture cases be put through the so-called prophylactic treatment prior to treating the mouth, so as to avert, if possible, any secondary disease that may occur. In

this way I believe the proportion of cases of necrosis and abscess conditions that follow fractures would be materially reduced. I feel confident that the addition of an intern in our institution will raise the efficiency of our work 100 per cent.

DR. G. V. I. BROWN, Milwaukee: I am on the surgical staff of the Children's hospital in Milwaukee just as all the other surgeons are. We have recently had a visiting dentist appointed on the staff. In order that we might outline the work he and I have made a complete examination of the children's mouths in the hospital, and as simple as that may sound, we found it difficult to do, for we found it impossible for us to do it all in one day, and between visits the children would come and go. As the result of our work, the dentist has just sent in a recommendation which will call for a mouth examination as part of the regular intern's examination for each patient. For example, when the history of the case is taken, the general physical examination will include an examination of the mouth with sufficient accuracy to warrant calling in a dentist or otherwise. At least there will be a mouth record of every case the same as the physical record. There has not been any mixing of medicine and dentistry on that; we consider that it is a matter which pertains to the welfare of the patient. We found an appalling state of affairs in the hospital. We found that little patients were lying in bed for months, being treated for joint diseases when they had anywhere from one to five diseased teeth in their mouths. In view of the recent investigations and demonstrations, the importance of this will be understood. We are to blame for that as much as the surgeons; it is a question of wrong routine. In the other hospital with which I am connected I have not had the courage to have a dentist intern appointed. I did not care to have the matter disturbed and have other questions arise which I could not meet. I am there simply as an oral surgeon. When Dr. Wheeler gets this work on the right basis, and when somebody has shown me exactly what should be the relation of the dentist in the hospital, then of course I want to appoint interns. In the meantime, however, I do not care to take the responsibility.

DR. A. D. BLACK, Chicago: It is only necessary for a person familiar with mouth conditions to spend a few minutes in a hospital to see the necessity for this work. The greatest difficulty in establishing the work heretofore has been the lack of appreciation of the physician of it and the difficulty of placing dentists in the service on the proper basis, because we cannot get the kind of men we want to do this work under the conditions which have heretofore presented in most of the hospitals. I wish to emphasize that there has been enough published in the medical literature of the past two years, to say nothing of any other work, to have attracted the attention of every physician on every hospital staff to the importance of the mouth as they have never appreciated it before, and there should be no difficulty at present in presenting to any hospital one or the other of the plans which Dr. Wheeler has outlined and have them accept a plan and appoint dentists for the service. In St. Luke's Hospital in Chicago, as Dr. Gilmer has said, we have done many things that are not expected of us, because of the crying need for it. I know I have many times sacrificed time which I was not expected to give because of the need for dental service among the patients and because under the hospital arrangement there was no other way to get the service. There is another feature to this work that I would like to speak of, and that is that there is opportunity in the establishment of these internships in hospitals for the dental profession to get credit for the service or to be embarrassed by the service given, in accordance with the type of men who are selected for this service. We need to be extremely careful of the men we put in because the contact with the medical men and the patients in that service is of tremendous importance. We have the opportunity there to impress on them the value of this dental service as we have in no other way.

DR. T. F. THOLEN, Los Angeles: In the Los Angeles County Hospital we have an oral surgeon who visits the hospital and who confers with the men in the surgical section as to the treatment of oral surgical cases. We have had very good results from this method, but Dr. Wheeler's method seems to be so much better that I think I will do what I can to induce them to introduce his method.

DR. E. A. BOGUE, New York: It does not seem to have been recognized by the medical world at large until lately that the mouth and nose, which are connected by one passage, constitute the entrance for all that we take in to support life, and almost all that we take in to destroy it, and that the condition of the teeth has much to do with the general health. It seems to me that Dr. Wheeler has pretty nearly put us on the track of developing our section and placing it in its proper position in the medical world. I hope he will persevere until all of our hospitals establish the intern system for dental practitioners. As I understand it, all these interns have to be graduates?

DR. WHEELER: At present they not only have to be graduates, but also have to pass the state board.

DR. BOGUE: In England there is a practice of extracting all temporary teeth, if one happens to be bad enough to come out, but we are rapidly getting away from such practices. In several of the European countries the governments are appointing dentists to take care of the teeth of the children, and in this country, the Forsyth Infirmary in Boston, of which you all know, is doing an enormous amount of work in the way of caring for the teeth of the poor children of the city.

DR. H. L. WHEELER, New York: There is just one way to get dental service in the children's hospital, and that is to appoint dental interns and let them live there with the medical interns. The service cannot be had in any other way unless it is paid for, and if this scheme is adopted trouble arises because the medical men also want to be paid. This subject in New York City has had a good deal of discussion, not only in the profession but by the laity, and only recently the committee of the Board of Estimate and Apportionment decided to recommend that dentists be put in the same classification as medical men in every department where dentists are to be appointed. They have decided to have first class interns, both medical and dental, men who have graduated from college but who have not yet passed the state board unless they wish to. They may be appointed intern for one, one and a half, or two years, and receive a certificate from the hospital when they finish their service. They are to receive besides as spending money, $240 the first year and $360 the second year. Any man who has served as an intern for one year, or served in the dental clinic for two years, which clinic requires of him three hours' service each week, may be appointed to the second grade which is known as the junior grade. The junior grade is to receive from $900 to $1,380 and is on the same basis as the physician in the Department of Health. After he has served two years in that department he may be advanced to number three grade, which starts at $1,560, to any price that he may be worth, and that is where he has an advantage over the medical man, because the medical man can only advance to the third grade. That is what we are doing in New York. The only satisfactory way to do this is to have the dental men put in the hospitals on the same basis as the medical men and use a little precaution as to who is selected for the dental staff, because one dental man who is a little too aggressive can wreck the whole thing, and the dentist who uses due discretion will make it possible to get the support of the city fathers and get the necessary means to carry on the dental service in any city. The final result of this in New York is going to be that in all clinics which are supported by the benevolently inclined public and charity organizations, these young men will be employed to go into the classified service, which is under the regulation of the city Department of Health, and that will be the only way that one can get into the classified service.

A Guide to Contentment.—Seek not that the things which happen should happen as you wish; but wish the things which happen to be as they are, and you will have a tranquil flow of life.—*Epictetus.*

ANKYLOSIS

AN EXPERIMENTAL STUDY*

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ST. LOUIS

This experimental study was undertaken for the purpose of investigating the changes that take place in the joint structures during the process of ankylosis. In a previous study[1] on the mobilization of ankylosed joints, it was observed that there was a marked difference in the reaction to injury between epiphyseal and diaphyseal bone. In the experiments reported there was fibrous union between two denuded joint surfaces at the end of sixty days. At the end of this period of time there was no evidence of bony ankylosis. A further study of this process was carried out in the experiments here reported with the belief that the facts gained will aid in the surgical treatment of ankylosed joints.

Hoffa[2] has defined ankylosis as the condition in which two or more joint surfaces become bound together and immovable. He distinguished three types; an intercartilaginous fibrous ankylosis, an interosseous fibrous ankylosis and an osseous ankylosis. True bony ankylosis, according to Hoffa, may be produced in two ways. Sometimes there is transformation of the connective tissue of a fibrous ankylosis directly from a cartilage metaplasia. At other times following the destruction of cartilages from inflammatory diseases, bony union develops from the bone marrow and periosteum.

Nichols and Richardson[3] from the study of sixty-seven cases of non-tuberculous arthritis, divide this condition into two types; namely, a proliferative type and a degenerative type. In the degenerative there is a tendency to destruction of joint cartilage with deformity and no ankylosis.

An arthopathy, such as a Charcot joint, is typical of this class. In the proliferative type there is destruction of joint cartilage leading to ankylosis of adjacent joint structures. In this type the earlier change is a proliferation of the synovial membrane at the insertion of the joint capsule. This leads to a pannus growth which advances over the cartilage, at times uniting the two joint surfaces and destroying the underlying cartilage. Accompanying this process there may be destruction of the joint cartilage on its epiphyseal surface by granulation tissue from the marrow spaces. These investigators believe that the destruction of cartilage by the pannus growth predominates, though either process leads to fibrous ankylosis. True bony ankylosis, according to Nichols and Richardson, may be produced in three ways. In certain instances there is a proliferation of the perichondrium, which is readily transformed into cartilage or bone. In other instances new bone production results from osteoblasts which have their origin in the bone marrow. Finally, in rare instances, there is a direct transformation of fibrous tissue into bone.

Axhausen and Pels[4] and Kroh[5] have described joint changes resulting from injury in experimental studies of arthritis deformans. In the literature above referred to various joint changes have been described, but the sequence of these changes and the duration of the ankylosing process have not been made clear.

The object of these experiments was the study of the nature, sequence and duration of the joint changes which lead to bony ankylosis. In these experiments the knee joints of dogs were used. All experiments were done under complete ether anesthesia. All operations were done under a careful aseptic technic. Postoperative care of the animals used was such as to insure as little suffering as possible. All animals were sacrificed with chloroform. Four experimental methods were used.

I. Partial excision of joints.....	8 experiments
II. Destruction of joint cartilage..	3 experiments
III. Injury to joint cartilage.....	2 experiments
IV. Direct infection of normal joints	7 experiments

I. PARTIAL EXCISION OF JOINT

The knee joint was opened by a lateral longitudinal incision, the patella and its tendon were displaced medialwards, the cruciform ligaments were divided. The knee was completely flexed and 1 cm. of the lower end of the femur and 0.5 cm. of the upper end of the tibia were removed with a saw. The joint was then closed with interrupted fine silk sutures and held fixed by a plaster-of-Paris dressing.

SUMMARY

In these experiments in which the joint was partially excised and the cancellous bone surfaces of the epiphyses were approximated, there was produced the simplest experimental condition for the study of the development of bony ankylosis. The condition is the same as that which is produced in a surgical operation for the mobilization of an osseous ankylosis.

These experiments show that ankylosis by bone is a slowly developing process.

At the end of six days (Experiment 10) the apposed bones were united by a fibrous exudate into which is growing granulation tissue from the bone marrow. At the end of nineteen days (Experiment 3) the bones are united by connective tissue. In Experiments 4, 8, and 2 of fifty, sixty-four, and eighty-six days respectively, the connective tissue uniting the bones became progressively more fibrous in character. At the end of 146 days (Experiment 7) the fibrous ankylosis was being changed into an osseous ankylosis by a direct transformation of the fibrous tissue into bone. In Experiment 5, after 180 days with close approximation of the bone surfaces, the ankylosis was by bone.

II. DESTRUCTION OF JOINT CARTILAGE

The knee joint was opened by a lateral longitudinal incision, the patella and its tendon were displaced medialwards. The semilunar cartilages were removed from the head of the tibia, and the joint cartilage was curetted from the joint surfaces of the tibia, femoral condyles, and patella. The joint was closed with inter-

* From the Surgical Laboratory of Washington University Medical School, St. Louis.
* Read before the Section on Orthopedic Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Allison and Brooks: The Mobilization of Ankylosed Joints, Surg., Gynec. and Obst., 1913, vii, 645.
2. Hoffa, A.: Ortho. Chir., 1902, Stuttgart, F. Enko, Ed. 4, p. 55.
3. Nichols and Richardson: Arthritis Deformans, Jour. Med. Research, 1909, xxi, 149.
4. Axhausen and Pels: Exper. Beiträge zur Genese der Arthritis Deformans, Deutsch. Ztschr. f. Chir., cx, 110.
5. Kroh, F.: Experimental Arthritis Deformans, Deutsch. Ztschr. f. Chir., 1909, xcix, 425.

rupted fine silk sutures. The limb was held fixed in a plaster-of-Paris dressing.

SUMMARY

In these experiments in which the articular cartilage was destroyed the condition produced was essentially the same as that in which partial excision was done, except that the normal contour of the bones was unchanged. This condition is the same as that which follows a surgical operation for the mobilization of an ankylosis in which the bones have retained their normal shape—such as is found in fibrous ankylosis.

These experiments show that after destruction of joint cartilage there is union of the joint surfaces by connective tissue which is slowly transformed into bone.

In Experiment 22, actual union by bone was not complete at the end of 334 days.

III. INJURY TO JOINT CARTILAGE

Experiment 23. Knee joint opened in the usual manner. With a curet small areas of cartilage were removed from the inferior surfaces of the femoral condyles and from the outer surface of the tibial head. The joint was closed as usual. No plaster-of-Paris dressing was applied.

SUMMARY

In this experiment the injury to the joint cartilage was comparatively slight. Fourteen days after the destruction of a small area of joint cartilage there was an inflammatory process in the joint which was destroying the cartilage in a manner exactly similar to that which follows infection of the joint cavity. In Experiment 27, in which the joint injury was limited to a transverse patellar fracture, there were after 365 days definite pathologic changes in the joint cartilage and synovial membrane.

IV. DIRECT INFECTION OF NORMAL JOINTS

In these experiments the organisms were injected directly into the knee joint cavity with a hypodermic syringe. The organisms used were a *Staphylococcus aureus* obtained from a fatal case of pyemia in man; and a bacillus tuberculosis of the human type, which had been grown in the laboratory for several years. Of the *Staphylococcus aureus*, twenty-four-hour broth cultures were used for injection. Of the tubercle bacilli one-month glycerin-agar cultures were suspended in normal salt solution.

SUMMARY

In these experiments, in which bacteria were introduced directly into the joint cavity, characteristic pathologic changes resulted. The joint changes in the experiments in which tubercle bacilli were used were the same as those observed in the experiments in which the staphylococcus was used. The extent of the joint changes and the general reaction to the infection varied widely in the different experiments.

Immediately after the introduction of the infectious agent into the joint cavity there was a marked local reaction evidenced by swelling, heat and tenderness. There was a fibropurulent exudate in the joint cavity, which produced adhesions between the capsule and the condyles, resulting in a marked diminution in the size of the joint cavity. The destruction of the joint cartilage was always the result of absorption by granulation tissue. Granulation tissue arising from the proliferating synovial membrane destroyed the cartilage at its margin and granulation tissue from the bone marrow destroyed the cartilage from below.

GENERAL SUMMARY

From the experiments in which the joint cavity was infected with tubercle bacilli or staphylococci, or in which a slight injury was done the joint cartilage, we are led to believe that any inflammatory process within a joint which is of sufficient severity to result in the formation of granulation tissue will destroy the joint cartilages. The cartilage is absorbed at its margin by granulation tissue arising from the synovial membrane and at its base by granulation tissue from the bone marrow.

By the experiments in which the cartilage was removed by operation, or the joint partially excised we have shown that ankylosis by bone is a slowly developing process which consists of the following stages: 1. There is union by granulation tissue; 2, there is union by dense fibrous tissue; 3, there is a metaplasia of fibrous tissue into cartilage and a direct transformation into bone. The shortest period of time in which complete bony ankylosis was observed experimentally was 180 days. In man the duration of the process is equally prolonged.

The long duration of the process of osseous ankylosis we believe explains the following: After arthroplasty a joint may allow motion for some weeks and subsequently become stiff. Fractures of the epiphysis unite by bone slowly. It also suggests that the conclusion reached by certain investigators that the interposition of soft parts prevents bony ankylosis is misleading in that many of their experiments were of insufficient duration.

The long duration of the fibrous stage of ankylosis also shows conclusively that any method of arthroplasty should have as its object the prevention of fibrous ankylosis rather than bony ankylosis; also that the insertion of an irritative substance into a joint should be avoided.

ABSTRACT OF DISCUSSION

DR. J. TORRANCE RUGH, Philadelphia: Perhaps neither Dr. Allison nor Dr. Brooks has read a paper that I presented before the American Orthopedic Association four or five years ago; but Dr. Allison used almost the same words that I used at that time. My paper was a purely clinical one, based on a study of a series of cases of excised knee-joints; and the work that has been done by Dr. Allison carries out exactly the statement that I made then, which was based on clinical observation; that is, that bony union between the epiphyses of the long bones after excision does not take place under from six months to two years. I also made a plea, at that time, for the longer fixation of a joint after its excision, because of the great danger of deformity resulting from absence of bony fixation. I am extremely glad to-day to find the clinical observations that I made at that time proved correct by the experimental work of Dr. Allison.

The Proper Correlation of Experience.—When memory pictures have a faulty setting, they may influence behavior disastrously. The old man thinks all this talk about impure milk killing infants and infected water causing typhoid fever is nonsense, because all his life people, both young and old, have been drinking dirty milk and polluted water. . . . He has always connected these bereavements with the world-old belief that disease could not be prevented nor death delayed. . . . Many reason post hoc ergo propter hoc. This faulty logic is still a strong support of charlatanism in its many survival forms.—Victor C. Vaughan, *Science*.

THE BLOOD-PRESSURE DURING PREGNANCY

BASED ON OBSERVATIONS ON 450 CASES FROM THE RECORDS OF THE COMMITTEE IN CHARGE OF THE PRENATAL WORK CARRIED ON BY THE WOMEN'S MUNICIPAL LEAGUE OF BOSTON *

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The patients (450 in number) on whom this report is based were referred to the prenatal committee of the Women's Municipal League of Boston for care during pregnancy, either by institutions which have no facilities for prenatal work, although equipped to care for the labor and convalescence of their patients, or through the personal application for prenatal care made by the patient herself. The length of time that the patients were under observation varied from a few days to six months, according to the period of pregnancy which had been reached when the patient first sought prenatal care, and averaged about two months or a little longer. As long as no abnormal symptoms developed the patients remained under the observation of the prenatal committee, but the care during labor was provided by the institution referring the patient or by the patient's private physician, and all abnormalities discovered during pregnancy were immediately reported to the medical adviser, the prenatal work being confined to close observation of the patient's condition and such advice as is suitable for a nurse to give.

The routine of the work is as follows: As soon as a patient is referred to the prenatal committee for care she is visited at her home by the nurse, who gives her practical advice, suited to her circumstances, in regard to the hygiene of pregnancy, diet, clothing, exercise, etc., takes the blood-pressure and examines a specimen of urine for albumin. This visit is repeated at ten day intervals, or oftener in doubtful cases, until the time of labor. All abnormalities are reported at once to the proper persons, so that in case of need the patient shall receive more adequate attention. This system is not, perhaps, ideal, since for the most satisfactory results the clinic in charge of the prenatal work should be in a position to provide adequate care for the abnormal cases which it meets, and there should be no division of responsibility, as inevitably occurs under this system, but it certainly results in giving these patients much closer observation than they would ordinarily receive.

This report is based on the records of blood-pressure thus obtained and is made with the feeling that although it shows nothing of startling interest, it will prove of value, even though the facts which it develops only serve to corroborate the work of previous observers. It has been recognized for some years that the estimation of the blood-pressure during pregnancy furnishes evidence of considerable value in determining the condition of a patient during pregnancy, an abnormally low pressure suggesting that the patient is likely to react unduly to the strain of labor and should be saved all avoidable shock and suffering, while a high pressure is not infrequently the initial symptom of a toxemia and should call for increased watchfulness on the part of the attending physician, even though no other abnormal symptoms are to be discovered on a thorough investigation. The average blood-pressure during pregnancy is commonly stated as 118, and it is also commonly stated that the pressure tends to rise toward the end of pregnancy in perfectly normal patients, a statement which in this series appears to be true for only a limited number of patients. The normal variations of the blood-pressure may be considered as from 100 to 130, and although the observations in this series are too infrequent to show what transitory changes may occur in the normal patient, only one patient in whom the pressure remained within these limits developed any abnormal symptoms. This patient developed postpartum eclampsia and had several convulsions, but made a good recovery. In this case the last visit of the nurse had been made eight days before delivery, and the blood-pressure had presumably not been taken during or immediately after labor so that we have no information as to the development of the toxemia, but in all probability a toxemia of low grade was brought into prominence by the exhaustion of labor. A closer observation of the patient before labor might or might not show the impending danger in such a case, but such an occurrence suggests that the pressure should be estimated in all cases during labor and soon afterward as well as during pregnancy.

If the blood-pressure remains persistently under 100 it is fair to assume that the patient's general condition is below par, and steps should be taken to improve it. At the time of labor the patient should be watched carefully and guarded as far as possible against exhaustion, since the patient with an unduly low pressure not infrequently develops shock and collapse to a marked degree following labor. If the pressure is over 130 the patient should be kept under close observation even in the absence of other symptoms, and a rising pressure should receive most careful attention. A pressure of 150 has been commonly called the danger line, but a persistent rise of pressure from a low point, even though it may never reach the arbitrary danger line, calls for most careful attention.

Of the 450 cases, 421 patients showed a blood-pressure that at no time was either below 90 or above 130; in other words the 421 patients showed what can be properly classed as absolutely normal blood-pressures. Of these 421 patients, 78 at some time during the pregnancy showed a pressure slightly below the normal, ranging somewhere about 90 and 100. In none of these patients, however, was the low blood-pressure persistent, it only being noted on one or two examinations, and in no instance did any uncomfortable symptoms develop in labor afterward referable to the low pressure, showing, therefore, that a temporary low blood-pressure is of no significance during pregnancy. Of these 421 patients, only the above mentioned patient who had postpartum eclampsia had any uncomfortable symptoms. The remaining twenty-nine patients showed at some time during their pregnancy a pressure which was above the normal limits, that is, above 130. There were four patients who ran a constant pressure of 140 at each examination and one patient who ran a constant pressure of 145 through the pregnancy. In none of these patients did any trouble occur, and the high pressure seems to have been due to other conditions rather than to changes taking place during pregnancy. In the remaining twenty-four patients the blood-pressure showed marked variations, running as high in one instance as

* Read at the Fifth Annual Meeting of the American Association for the Study and Prevention of Infant Mortality, Boston, November, 1914.

195. This patient developed eclampsia in spite of treatment, and there were several other patients in whom threatening symptoms developed, but in whom the conditions yielded to treatment.

In the 450 cases the examination of the urine showed albumin persistently or temporarily fifty times. Eleven of the fifty patients who showed either transient or persistent albuminuria also showed a blood-pressure of over 130, and every case of toxemia, except the postpartum one mentioned, developed among these patients. The rise in blood-pressure preceded the finding of the albumin in every instance except one, suggesting definitely the fact that a rise in blood-pressure is apt to be followed by albuminuria and other symptoms of toxemia, and that a high blood-pressure plus albuminuria are symptoms which call for immediate attention. The recognition of the high blood-pressure plus albuminuria was immediately followed by proper treatment, which was successful with one exception in checking the process before it became serious, showing the value of frequent observation of the patient during pregnancy. The occurrence of albuminuria in more than one-third of the patients who show an abnormally high blood-pressure as compared with its occurrence in less than 10 per cent. of the patients who did not show a high blood-pressure, is definite proof of the value of the estimation of the blood-pressure during pregnancy.

The fact that in 421 of the 450 cases the blood-pressure was within normal limits and that in only one of these patients did any sign of toxemia occur, certainly tends to show that as long as the blood-pressure remains normal the presence of slight traces of albumin in the urine (which were noted in 39 of the 421) is negligible.

I have attempted to tabulate the observations in this series with the object of learning, if possible, whether any particular group of cases showed constant variations in blood-pressure, either within the normal limits or not.

Race.—The patients in the series were of many different nationalities as follows:

American	159	Russian	16
Jewish	81	Scotch	12
Canadian	47	Swedish	7
Irish	43	Italian	7
English	20	German	6
Colored	19		

The remainder were either divided in small numbers among many different races or the nationality was not given. The examination of the records shows, as would be expected, that there are no characteristic variations in blood-pressure in the different nations.

Age of Patients.—The patients ranged from 16 to 45 years of age. Sixty-seven were under 20 years of age; 271 between 20 and 30; 80 between 30 and 40, and 7 were over 40. The age of 15 patients is not given. In line with the fact that the blood-pressure is apt to be considerably elevated in persons of above 50 years of age in whom arterial changes are common, it seemed fair to expect that a rise in arterial tension might be expected in the women in the latter part of the child-bearing period. Contrary to expectations there was no such tendency evident on examination of the records. On the contrary, in the one case of eclampsia which occurred during pregnancy the patient was only 18 years old. It is, therefore, fair to assume that in women during the child-bearing period a high blood-pressure is due to some individual peculiarity or disease and is not to be expected. The more or less constant rise in pressure which is observed in later life seems, therefore, to begin at or after the menopause and is evident during the child-bearing period.

Number of Pregnancies.—In this series there were 218 primi-parae; 99 II-parae; 46 III-parae; 34 IV-parae; 17 V-parae; 9 each VI-, VII- and VIII-parae; 5 IX-parae, and 4 who had had ten or more pregnancies. It might well be expected that the increased strain thrown on the whole organism by repeated pregnancies would be reflected by a rise in pressure to a greater or less degree, but the observations made on these patients show no constant change, two of the three women in their twelfth pregnancy having a blood-pressure of 120 or less throughout. In studying the series as a whole, however, it would seem that after the second pregnancy there is a slight tendency upward in the pressures. This tendency is not sufficiently marked to be significant. The average in the seventh pregnancy as compared with the first is between five and ten points higher. In other words, it would seem that repeated pregnancies, in the absence of complications, have little or no effect in producing an increase in arterial tension, and that in the absence of complications a normal pressure is to be expected in a pregnant woman irrespective of her age or the number of the pregnancy.

Relation Between Albuminuria and High Blood-Pressure.—The urine was examined for albumin in conjunction with the estimation of the blood-pressure. The specimens examined, however, were not catheter specimens, and, as is well known, albumin is found much more frequently in non-catheter specimens, some observers placing it as high as 40 per cent.

In this series 50, or about 11 per cent., showed albumin at one or more examinations, an extremely low percentage, but since the urine was only examined by an expert when large traces of albumin were present or when other symptoms developed, it seems probable that small traces may have been overlooked, and the percentage really may have been considerably higher. In 37 of the 50 cases the albumin was found at one examination only and the blood-pressure showed no change, nor did other symptoms develop. In 2 cases the albuminuria was more persistent but no other symptoms developed. In 11 cases the presence of albumin was accompanied by a rise of blood-pressure to over 130, in 5 of which patients the albumin disappeared and the pressure dropped as soon as appropriate treatment was instituted.

In the six others the albumin and high pressure persisted until after delivery. Four of these patients also developed other definite symptoms of toxemia, but spontaneous labor ensued, with relief before the more serious symptoms developed. In one patient only did convulsions occur and this patient made a good recovery on being delivered. This patient had a persistently high pressure for the six weeks she was under observation, but the albumin did not appear till eight days before delivery, from which time it increased rapidly in amount, the blood-pressure rising to 195 shortly before the convulsions developed.

Another patient had a blood-pressure of from 150 to 180 for a month before delivery, with a slight amount of albumin constantly present. She did not develop convulsions, but gave birth to feeble twins at seven months, one of which lived only a few hours. One patient referred to previously had postpartum convulsions, no abnormality having been noted during the four and one-half months she was under observa-

tion. Six patients ran a persistently high pressure of between 135 and 145, but at no time showed any other symptoms and were delivered safely. With one exception all of the patients who developed toxemic symptoms showed a rising blood-pressure as the first symptom, but in one case the appearance of albumin preceded the rise in pressure. Although the number of cases is too small to form the basis of any definite conclusions this would point to the conclusion that a rise in blood-pressure even in the absence of other symptoms should receive serious consideration as possibly being the initial symptom of an impending toxemia.

Results.—In the 450 cases there were four maternal deaths following delivery. One patient died of pneumonia; one of hemorrhage from placenta praevia; one of heart disease, and one of septic infection. Neither the blood-pressure nor urinary examination showed anything abnormal in any of these women.

There were nine still births in the series. Four were due to difficult operative delivery; two to placenta praevia, and one each to premature detachment of the placenta, congenital syphilis, and fetal monstrosity. In each case the pregnancy was normal as far as shown by the urine and blood-pressure.

There were four premature births, and three of the babies died, one at 7 and two at 8 months. In two of these cases the mother showed an abnormally high blood-pressure, one of the patients developing a definite toxemia, though without convulsions, the maternal condition accounting directly for the death of the child.

CONCLUSIONS

The study of the records of these cases shows definitely that a considerable number of patients have a temporary rise in blood-pressure during pregnancy without the development of other symptoms, as is found in patients under other conditions. The significance of this rise in blood-pressure can only be ascertained by a frequent study of the blood-pressure in a large number of cases. In other cases the rise in blood-presure was followed by the appearance of albumin, a combination of which has been shown to be a definite indication of the development of toxemia. In only one case, however, did convulsions develop, the other cases yielding to treatment. Thirty-nine cases showed slight traces of albumin in the urine, but no changes in the blood-pressure. As the urine was not obtained by catheter, the source of the albumin is unknown, but in the majority of the cases it was probably due to contamination of the urine by leukorrheal discharge. To judge from these cases, the presence of a slight amount of albumin, if not accompanied by a rise in blood-pressure, is negligible. Eleven patients showed albumin with a high blood-pressure, all of these being presumably more or less toxemic. Five patients showed a blood-pressure of 140 or over throughout the period during which they were under observation. Only one of these patients developed albumin at any time during the pregnancy and all passed through labor normally, which would tend to prove that persistent high blood-pressure, in the absence of other signs, is not necessarily a dangerous symptom, although it should always arouse suspicion and call for increased watchfulness, whereas, as was shown in other cases in this series, a rise in blood-pressure from a low point is not infrequently followed by the appearance of albumin and the development of symptoms of toxemia, and is more significant than a high pressure throughout.

HYPOPITUITARISM IN CHRONIC HYDROCEPHALUS

LEWIS J. POLLOCK, M.D.

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Disorders of pituitary metabolism may be due to disturbances of the gland itself, organic or functional, as tumors, hyperplasia, hypoplasia, etc., or such changes may be the result of remote factors, such as distant tumors pressing on the gland, and hydrocephalus. In severe hydrocephalus, the third as well as the other ventricles is distended with fluid; it becomes cystic, bulges, and presses on the underlying pituitary gland.

The disturbance of pituitary function resulting from hydrocephalus may manifest itself in two conditions, hyperpituitarism (Neurath, Cushing, Oppenheim), or in hypopituitarism. In view of the frequency of dyspituitarism in chronic hydrocephalus, the literature on the subject is astonishingly scarce.

Marinesco and M. Goldstein,[1] in December, 1909, and Kurt Goldstein,[2] in 1910, described the clinical picture of pituitary body disease as an accompaniment of hydrocephalus. Kurt Goldstein calls attention to the fact that changes in the sella turcica have been noted in cases of chronic hydrocephalus in the cases of Schüller, broadened and flattened, of Fermröhr, a widened entrance, and of Oppenheim, a very deep groove. He further states that in a careful search of the literature he has found cases of chronic hydrocephalus presenting isolated symptoms which were probably similar in character to the symptoms observed in his own cases, namely, obesity (Quincke), amenorrhea (Jollye) and hypoplasia of the uterus and amenorrhea (Moore). Seivert reported two cases which Goldstein states are similar to those reported by himself; two sisters, aged 9 and 15 years, both of whom were fat, had optic atrophy and hydrocephalus, but no genital atrophy. Goldstein reports three cases, in all of which enlargement of the head was associated with a very fat body and undeveloped genitalia; the second patient had some symptoms of bony overgrowth shown by separation of his teeth and enlargement of the ends of his bones. In no case was a necropsy obtained. He makes the diagnosis of meningitis serosa by virtue of the long duration, the remissions, the absence of focal symptoms and the presence of concentric diminution of the field of vision without hemianopsia. He further asks if it is not possible to obtain the symptom complex ordinarily accompanying tumor of the hypophysis from pressure on the hypophysis by an increased amount of cerebrospinal fluid.

Mueller[3] reports a case of tumor of the posterior fossa with secondary hydrocephalus in a girl aged 16 years who showed arrested menstruation, small stature and abundant adipose tissue.

Marinesco and Goldstein report two cases with necropsy, one, that of a boy of 15, who, besides the symptoms of a cerebellar neoplasm, showed enlargement of the head, marked adiposity, hypoplasia of the genital organs, no hair in the axillae or on the pubes. Necropsy showed a cystic tumor of the cerebellum

1. Marinesco and Goldstein, M.: Two Cases of Hydrocephalus with Generalized Adiposity, Nouvelle Iconographie de la Salpêtrière, 1909, xxii, 628.
2. Goldstein, Kurt: Meningitis Serosa unter dem Bilde hypophysärer Erkrankung, Arch. f. Psychiat. u. Nervenkrankh., 1910, xlvii, 126.
3. Mueller, quoted by Marinesco and Goldstein (Footnote 1).

with secondary hydrocephalus, a compressed pituitary body and a broadened-out sella turcica. The second case, that of a girl aged 16, showed a large head, marked adipose deposits, scanty hair, menstruation every three or four months, and small mammae. Necropsy showed chronic hydrocephalus and no new growth of the pituitary body.

Cushing[4] remarks on the scarcity of literature and calls attention to twenty preadolescents with tumor cerebelli and chronic hydrocephalus, all being well nourished, and many quite adipose. He likewise reports one case of essential hydrocephalus with hypopituitarism, one case of cerebellar cyst with hydrocephalus and hypopituitarism and one case of endothelioma of the right hemisphere, hydrops of the third ventricle and hypopituitarism, all with necropsy.

He mentions six illustrations of the syndrome of hypopituitarism in chronic hydrocephalus reported by Babonneiux and Poisseau.

Oppenheim[5] states that he has seen two cases of cerebellar cysts with secondary hydrocephalus causing symptoms of acromegaly.

I[6] have reported one case of hypopituitarism in chronic hydrocephalus with necropsy. Because of the inaccessibility of the bulletin wherein it was published, this case will be described along with the others here reported.

The frequency of dyspituitarism in chronic hydrocephalus may be shown by the fact that since the publication of the foregoing report in 1913, twelve additional cases have been observed, ten in institutions and two in private practice. Of these, three will be briefly described.

In all the cases, adiposity was the predominating feature, ranging from that of an overnourished person to that of a monstrosity. Genital hypoplasia was observed but once; all the cases show a delicate, pudgy, tapering hand with broad base. Increased carbohydrate tolerance was found in all of six cases so studied. Not much importance can be attached to this particular feature, inasmuch as it is observed in many conditions and is not well understood. Thermic reaction following the injection of extract of anterior lobe (kindly furnished by Armour & Co.) was observed in none of six cases so tested.

REPORT OF CASES

CASE 1.—*History.*—S. D., man, single, no occupation, aged 40, was admitted to the Kankakee State Hospital, Nov. 1, 1905. The family history shows that the patient's father died of "paralysis," probably apoplexy; his mother of hemorrhage of the bowels. There is one brother living and well, and there were three sisters, two of whom are dead from unknown causes. Circumstances of the patient's birth are unknown. At the age of 4 months he developed "cerebrospinal meningitis" and was ill for several months; the condition was associated with opisthotonos and followed by spasmus nutans. After recovery, it was noted that the patient was deaf; he did not walk until he was 9 years old. Mentally he did not develop more than the equivalent of 7 years. At 15 he was taken to the Illinois State School for Deaf Mutes at Jacksonville. He was returned to his home at the end of eight months on account of his inability to learn. It was noted that while a young man he was fat, that his head was somewhat large, that the penis was very small and at the age of 18 the testicles "apparently disappeared." This condition was explained by the relatives as being the result of their being hidden by the excess of fat. He did not develop hair as did other men. A tin-type taken at age 18 shows a very fat boy with a large head. He had never complained of headache, nor did he vomit.

Examination.—On admission to the Kankakee State Hospital, examination showed a man, aged 40, weight 278 pounds, height 5 feet 6 inches. He was very fleshy; the skin was soft and moist, the mucous membranes red and muscles flabby. The hair on the head was dark and thin. In the axillae the hair was sparse and very thin over the pubes. The abdominal wall was protuberant. There was a moderate umbilical hernia and so large an amount of fat that the abdomen hung over the thighs like an apron, concealing the penis. The head was large and hydrocephalic, the tongue negative. Several teeth were missing. Examination of the chest showed the lungs to be negative. Heart action was rapid, the first sound loud. Abdomen showed dilated colon. The genitalia were notable for the atrophic penis and partially descended testicles. The penis was about 1¼ inches long, small in caliber, hidden by fat. Reflexes, deep and superficial, were normal. Pupillary reflexes were normal.

In this case, therefore, the notable features are hydrocephalus, adiposity, lack of hair and genital atrophy. The patient was quiet and tractable, possessed little memory, performed very few functions and even needed assistance in feeding. He was untidy, soiling and wetting himself, and made no effort to attend to the calls of nature. He frequently laughed loudly without cause and took no interest in his surroundings.

Aside from the steady decrease in weight there was noted no change in the condition of the patient after admission. There was no gross change in vision, but he became more and more unsteady in his gait. He was found dead in bed, Oct. 25, 1911.

Necropsy.—Post-mortem examination revealed an umbilical hernia, dilated colon with displacement upward of the thoracic contents, edema of the lungs, moderate general arteriosclerosis, fatty degeneration of the liver, chronic parenchymatous nephritis, colloid goiter, general adiposity, partially descended testicles and an infantile penis. The ossicles of the ear were quite small.

The skull and brain deserve more extended description. The calvarium was easily removed, and showed a marked thinning, each convolution of the brain being lodged in a groove of the skull. When held to the light the places marked by the grooves were found to be exceedingly thin. The dura mater did not bulge and was not adherent to the calvarium; it was quite thin but somewhat opaque.

On removal of the calvarium a large amount of cerebrospinal fluid was observed to be escaping from the brain, and as it was released at the base there was seen a small opening, the size of a pea, in the right orbital lobe from which spurted a clear fluid, of which there was apparently about 20 ounces. As this fluid escaped both sides of the brain collapsed, resulting in a mushroom-like appearance. When the brain was removed it was seen that there was a chronic hydrocephalus which affected all the horns of the lateral ventricles and the third ventricle as well. The latter by its distention produced a cyst-like formation above the optic commissure which was pushed downward and flattened. With the exception of the pituitary body, which was implanted on a very broad and bulging infundibulum, the structures in the interpeduncular space could not be seen. (The pituitary body itself was flattened from the pressure above it and was very difficult to remove from the sella turcica, which was broadened.) The cyst-like formation of the third ventricle extended backward to the crura, and on its sides were seen the third nerves. The convolutions were somewhat flattened throughout. The meninges were slightly edematous, the vessels somewhat injected.

After hardening and cutting of the brain into coronal sections it was seen that anteriorly the hydrocephalus was very marked, the brain tissues surrounding the cavity being but 1.5 cm. thick. A section in front of the optic commissure showed the foramen of Monro to be the size of a quarter, the

4. Cushing, Harvey: The Pituitary Body and Its Disorders, Philadelphia, J. B. Lippincott Company, 1912, p. 202.
5. Oppenheim, H.: Text Book of Nervous Diseases, 1911, p. 1380.
6. Pollock, L. J.: Chronic Hydrocephalus with Dyspituitarism, Inst. Quart., 1913, iv, 67.

third ventricle was distended to the size of a large walnut, the pillars of the fornix being exceedingly thin and membrane-like. The corpora albicantia were seen in the floor of the third ventricle, but did not make their appearance at the base of the brain. Above this was seen the septum lucidum, which was 3 inches long, 2½ high, and showed marked separation of its two walls, each of which was a delicate membrane with numerous fenestrae. Above this the body of the corpus callosum was very thin and posteriorly, membrane-like and ruptured. The splenium of the corpus callosum was likewise very thin. A section posterior to the midbrain when viewed in its anterior portion presented a broad fornix with the choroid plexus lying on it, which was in general appearance normal. As this was followed down, the hippocampus was seen sharply outlined in the floor of the markedly distended descending horn. The internal capsule with its adjacent ganglia was noted lying free in the cavity of the lateral ventricle on the superior and posterior surfaces, while inferiorly it was seen to be continuous with the midbrain. The ganglia were smaller than usual and flattened from above downward. The fourth ventricle showed a slight amount of distention and the floor was somewhat granular. The central canal of the spinal cord was negative. The pineal gland was compressed, its anterior surface forming a portion of the wall of the distended third ventricle. When removed a marked concavity was noted on its surface.

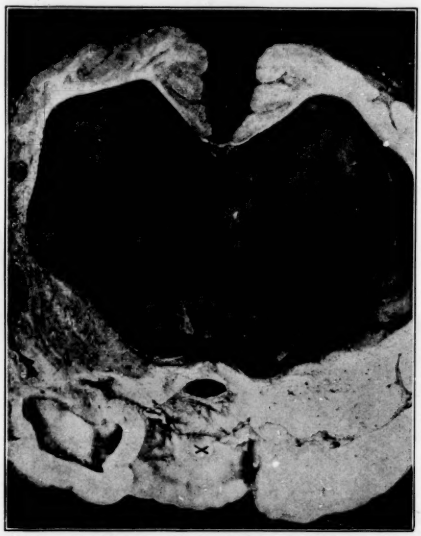

Fig. 1.—Pituitary gland (*x*) beneath the floor of the cystic third ventricle.

Microscopically the findings bear out the gross diagnosis, and only the pituitary body and pineal gland will be described. The pituitary body was flat and the posterior lobe showed an increase of connective tissue. The anterior lobe showed that the part adjacent to the posterior lobe was composed almost entirely of nuclei within cells showing very little protoplasm and no chromophilic granules. These nuclei showed various granules of degeneration; some were distorted, others large, swollen and quite pale; here and there was found a large chromophilic cell. In the remaining portion of the gland, the cells were somewhat crowded, the chromophilic cells being abundant. An increased amount of connective tissue was noted and here and there a small collection of colloid material. The pineal gland was crescentic in shape. There was a marked increase of connective tissue surrounding it. The interior of the gland was divided into compartments in which were seen numerous nuclei contained in cells with little protoplasm, resembling glia cells. Very little gland formation was seen. No ganglion cells were present. In several of the parts of the gland were seen masses of colloid material and in the center a mass which had become calcified (Fig. 1).

Fig. 2.—Cases 3 and 4.

CASE 2.—Girl, aged 11, height 4 feet 8 inches, weight 127 pounds, an overdeveloped, very obese child with tapering hands; was an idiot who could not talk; the pubic hair was well developed. Roentgenoscopy revealed a normal sella turcica, but a hydrocephalic skull.

CASE 3.— Woman, aged 19, had an attack of meningitis at age of 7 weeks, and has never walked or talked. She has a marked hydrocephalus and spastic diplegia. She has atypical epileptiform attacks, is very obese and has tapering hands. Menstruation is irregular.

CASE 4.—Woman, aged 25, has a marked hydrocephalus. She is an idiot with spastic diplegia, is exceedingly obese and has tapering hands. Menstruation is irregular (Fig. 2).

The specificity of the symptom of adiposity, described as associated with pituitary disease, is not well established. Marburg[7] first formulated the theory that adiposity is present not only in tumors of the pituitary, but in "certain cases of cerebral tumor of embryonic type and of ectodermal structure which cause adiposity, independently of their localization, by virtue of a specific internal secretion." That this is not entirely true is shown by the cases exhibiting pressure on the pituitary from hydrocephalus without tumor, and from tumors of the pineal gland not teratomatous in nature, as in the cases of Nothnagel, Mueller, Pearce Bailey and Smith Ely Jelliffe. Marburg[8] subsequently, in a study of tumor of the pineal gland and metabolic symptoms, described a tumor of the pineal gland associated with hydrocephalus but in which the pituitary was not disturbed, although infundibular hydrocephalus was present. He formulates three groups of pineal gland disturbances:

1. Hyperpinealism — obesity.
2. Hypopinealism — genital atrophy.
3. Apinealism — cachexia.

7. Marburg, quoted by Marinesco and Goldstein (Footnote 1).
8. Marburg: Zur Kenntnis der normalen und pathologischen Histologie der Zirbeldruse, die Adipositas Cerebralis, Wiener med. Wchnschr., 1908, lviii, 2617.

In a recent article on tumors of the pineal gland, Pearce Bailey and Smith Ely Jelliffe[9] give an exhaustive summary of the literature, in which they collect sixty cases.

It is notable that of sixty cases, thirty showed hydrocephalus, usually marked; of ten cases showing evidence of adiposity, in nine there is mention of hydrocephalus; in one of the other two (Marburg, mentioned above) there was no change in the pituitary. In the other case (Daly) no mention is made of hydrocephalus. The authors state that "the whole situation is in need of more extended study to determine whether pineal tumors alone can produce adiposity, apart from third ventricle hydrocephalus." Speaking of the accompanying hydrocephalus, which is "usually very marked in the third ventricle, and the infundibulum may be swollen and puffed out like a cyst," they state that "such a hydrocephalus can unquestionably lead to adiposis."

From the case here recorded as coming to necropsy no conclusion relative to the cause of the adiposity can be made, inasmuch as not only was the hypophysis compressed, but the pineal gland as well showed disturbances resulting from the dilatation of the third ventricle.

CONCLUSION

I wish to state that the purpose of this report is simply to call attention to the frequency of the association of hypopituitarism with hydrocephalus and by a few illustrations recall to memory many similar cases observed by all physicians.

The similarity of serous meningitis to tumor cerebri is well known and the inclusion of pituitary symptoms may lead to a diagnosis of tumor of the hypophysis, wrongly. The involvement of the pineal gland in the mechanical injury resulting from a cystic third ventricle deserves further study in its relation to cerebral adiposity.

I wish to express my thanks to the State Board of Administration of the State of Illinois for their kind cooperation in enabling me to observe some of the cases.

25 East Washington Street.

9. Bailey, Pearce, and Jelliffe, Smith Ely: Tumors of the Pineal Body, Arch. Int. Med., December, 1911, p. 851.

Value of Statistics.—Statistics have suffered in reputation because of the seeming truth of the trite statement that one can prove anything by figures. In reality figures are but evidence upon which conclusions may be based. If the evidence is faulty and the faults are not perceived, errors in judgment may result. But this is true of all evidence upon which opinions are based and is no more true of figures and statistics than it is of other kinds of evidence.—*Trask.*

HIBBS' OSTEOPLASTIC OPERATION FOR POTT'S DISEASE*

A REPORT OF CLINICAL OBSERVATIONS WITH RESULTS IN ONE HUNDRED AND FIFTY-EIGHT CASES, AND INTERPRETATION OF EXPERIMENTAL STUDIES IN ANIMALS

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About half a century ago Taylor and Sayre demonstrated the principles of mechanical support in the treatment of Pott's disease. Since that time the routine has been to apply, in the case of ambulatory patients, either a Taylor spinal assistant or a plaster-of-Paris jacket. More recently a Bradford or Whitman frame has been employed whenever the recumbent position was indicated. While these forms of treatment have resulted in a large percentage of cures, they have confessedly left much to be desired. Even the best apparatus is cumbersome and needs constant supervision; and in most cases only imperfect results can be obtained even after years of tedious treatment. In no branch of surgery, perhaps, is the social status of the patient in such close relationship to the possibility of cure. Among the well-to-do tuberculous lesions in the cervical and lumbar regions can be dealt with in a fairly satisfactory manner. The repair, however, of similar lesions in the dorsal region is usually a failure anatomically, although functionally good, because of the impossibility of immobilization. If such is the case under satisfactory social conditions, how much more unfavorable is the outlook for the poor dispensary patient! General recognition of these facts has led a number of men to attempt operative treatment of Pott's disease.

Fig. 1.—The spines and the posterior aspect of the vertebrae are stripped of periosteum, which is shown in circular white areas. The spines have not as yet been cut and imbricated.

Prior to 1908 no definite results were obtained, but in that year F. Lange implanted two tin-plated wire splints with bulbous ends beneath the muscles over the diseased area. These lay on either side of the spinous processes, their ends being attached to them by a silk suture. Two years later[1] the symptoms had subsided, deformity had not increased, and the splints had remained in place.

It has long been known from studies on the healed kyphos that in many instances a fusion of the posterior aspect of the vertebrae through the laminae and

* Read before the Section on Orthopedic Surgery at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

* From the New York Orthopedic Dispensary and Hospital, and from the Laboratory of Physiological Surgery, New York University.

* This article is abbreviated by omission of some of the illustrations.

1. Lange, F.: Jour. Am. Orthop. Assn., November, 1910.

spinous processes is the method by which Nature effects repair. Herein, obviously, is the key to the situation. If the surgeon could in a few weeks cause the fusion which it took Nature months or years to bring about, he could not well fail to stay the course of the disease and limit the deformity. Thus considered, the question became simply one of determining the best technic for causing arthrodesis of the lateral articulations and bridging the intervertebral spaces, thereby fusing the entire dorsal aspect of the vertebrae. Early in the year 1910 it became my privilege to assist Dr. R. A. Hibbs in his studies on the cadaver which led him to devise the technic which experience has shown to be both anatomically satisfactory and surgically acceptable. While it was easily demonstrable that in adult and adolescent life there was always adequate bone *in situ* to make the bridge, it was necessary in the case of very young children to await a verdict which should be based on actual findings at the operating table. It is gratifying to report that adequate bone exists at *all* ages; therefore the use of the autoplastic bone transplant, or any other form of foreign body, is not necessary. The use of such bone transplants had at first been deemed necessary in the case of younger children, but operative experience has demonstrated their uselessness.

The first account of Hibbs' operation[2] was published in 1911. He also described his method in a paper[3] read before the Section on Surgery of the American Medical Association, at Atlantic City, June, 1912. From this latter paper is taken the author's account of his operation, as follows:

Fig. 8.—Complete fusion after eighty days. The imbricated spinous processes are seen.

In performing the operation, a longitudinal incision is made directly over the spinous processes, through skin, supraspinous ligament and periosteum, to the tips of the spinous processes. The periosteum is split over both the upper and lower borders of the spinous processes and the laminae, and stripped back from them to the base of the transverse processes. The spinous processes are then transposed after partial fracture, so that they make contact with fresh bone, the base of each with its own base, and the tips with the base of the next below. The adjacent edges of the laminae being absolutely free from periosteum, a small piece of bone is elevated from the edge of the laminae and placed across the space between them, its free end in contact with the bare bone of the laminae next below it.

The lateral walls of periosteum and the split supraspinous ligament are brought together over these processes by interrupted chromic catgut sutures. The skin wound is closed by silk, and a steel brace applied. Detailed operative and postoperative directions follow.

The only addition to this technic has been as follows: The lateral articulations are exposed and the cartilage removed by a very small curet. This adds to the extent of the fusion.

We have now had ample opportunity to test the value of this operation. It would be too much of a tax on your time and patience to detail the nearly two hundred cases which have been treated by this method in the New York Orthopedic Hospital; therefore, I will briefly summarize the main features in the cases so treated during the years 1911, 1912 and 1913.

Summary 1911.—There were twenty-two cases, ranging in age from 5 years to 25 years; the duration of the disease was from two months to thirteen years; six had formerly worn plaster jackets; sixteen had worn spinal assistants; the range of the deformity was from three to twelve vertebrae; in six cases psoas spasm was observed, psoas abscess in two, and increased reflexes in eight; the number of vertebrae fused varied from five to fourteen.

Summary 1912.—There were seventy-two cases, ranging in age from 3 to 41 years; the duration of the disease was from four weeks to twelve years; six had formerly worn plaster jackets, thirty-seven spinal assistants and one Bradford frame; the range of the deformity was from three to twelve vertebrae; fifteen showed exaggerated reflexes, eight, psoas abscess and nineteen psoas spasm; the extent of the operation varied from five to fourteen vertebrae.

Summary 1913.—There were sixty-four cases, ranging in age from 18 months to 14 years; forty had previously worn spinal assistants, two had undergone bone transplantation from the tibia, and four had previous osteoplastic operations, an insufficient number of vertebrae having been included; the range of the deformity was from six to fourteen vertebrae; in twenty-three cases psoas spasm was observed, psoas abscess in two and increased reflexes in seventeen; the extent of the operation varied from eight to fourteen vertebrae.

Of the 158 patients seven have died, and four required reoperation for the above-mentioned reasons. With these exceptions, the results have been eminently satisfactory, inasmuch as, barring three who were paralyzed when they came to the hospital, all the symptoms of Pott's disease other than the deformity have disappeared; all the patients who have been operated on for a longer period than one year are without apparatus, and are able to carry on the ordinary avocations of life, whether play or business.

Of the seven who died, it should be noted that the cause of death was in every case extrinsic, and not due to the operation. One died one and a half years after the operation; cause of death, miliary tuberculosis; one died six and a half months after the operation, cause of death, tuberculous meningitis; one died sixteen months after operation, cause of death tuberculous meningitis; one died one and a half years after operation, cause of death, miliary tuberculosis; one died a year and ten months after operation, cause of death, tuberculous meningitis; one died three months after operation, cause of death, pyemia, the patient having been infected before he entered the hospital; one died a year after the operation, cause of death miliary tuberculosis.

2. Hibbs, R. A.: New York Med. Jour., May 27, 1911.
3. Hibbs, R. A.: An Operation for Pott's Disease of the Spine, THE JOURNAL A. M. A., Aug. 10, 1912, p. 433.

Necropsy on two of these cases showed, so far as the field of operation was concerned, a complete fusion of laminae and spinous processes from the lateral articulation on one side to the lateral articulation on the other side, the fusing bone mass in both instances being thick, strong and efficient, thereby proving that the operation itself had been perfectly successful.

In the four cases referred to in which reoperation was required, because an insufficient number of vertebrae had been included in the original operation, an incision was made through the old scar, the original field of operation was exposed, and the vertebral fusion present was found complete, but too short. After healthy vertebrae were included both above and below, the results were as satisfactory as in the other cases. The bone production is easily demonstrated by Roentgen ray in most cases, but the chief value of the roentgenograms is as a preoperative guide to indicate the number of vertebrae which should be fused.

The experimental series may be classified as follows:

Dog No.	Date of Operation	Date and Cause of Death	Days Old
172	March 23	March 27, meningitis	4
178	March 25	March 27, shock?	2
177	March 24	March 31, meningitis	7
126	March 22	March 25, shock?	3
127	March 22	March 28, meningitis	6
188	April 1	April 10, meningitis	9
189	April 1	Still living	
175	March 24	March 27, nephritis	3
104	February 5	Still living	
167	March 20	Still living	
166	March 20	Still living	

From the above it appears that the majority of the dogs died either of meningitis or shock. One, however, died of unilateral nephritis, based on autopsy finding.

It is interesting to notice the wide difference in mortality rate between the animal and the human series. For seven dogs the average postoperative life was four and one-half days; the total mortality, in a series of eleven dogs being 72.7 per cent. The cause of this high mortality has not yet been worked out, but as, with two exceptions, the skin wounds healed primarily, the inference is that the operative technic was reasonably clean and that dogs tolerate operative procedure of this nature poorly.

Of the recovered dogs, subjected to euthanasia, two, respectively sixty-two and sixty-eight days postoperative, show that while sufficient bone growth had not taken place to fuse the bridged vertebrae, considerable bone was shown in process of formation. Furthermore, these were undergraduate student preparations in which the fragments were found not to have adhered in a position to insure early fusion of the joints. It may be further noted that lamina-fusion in these animals was not attempted, nor were the lateral articulations disturbed, because of an attempt to reduce the mortality by using a less extensive procedure.

Another specimen, eighty-five days postoperative, shows complete vertebral fusion, while in another, over 100 days, somewhat denser bone deposits exist. One may therefore conclude from animal experiments that osteoplastic operations on the spine of dogs, especially if the laminae and lateral articulations are disturbed, is attended with high mortality, and that terminal bone formation sufficient to fuse the vertebrae and destroy all motion does not occur until after the seventy-fifth day.

Good Legislation.—It is the duty of the government so to legislate as to make it easy to do right and difficult to do wrong.—*Gladstone.*

OBSERVATIONS ON BONE TRANSPLANTATION (ALBEE METHOD) FOR THE CURE OF TUBERCULOUS SPINE DISEASE *

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Certain principles in the treatment of tuberculous spine disease appear so firmly established that they have been regarded as axiomatic. For 135 years conservatism has been considered the only reasonable and safe course to pursue, whereas it is only recently that operative measures have come into their own in Pott's disease. Hence to replace conservative by operative measures is to run counter to the established conservatism in the treatment of the disease, and naturally there is opposition on the part of those who have not yet accepted radical measures.

In considering the possibilities of cure for Pott's disease by bone transplantation into the split spines of several contiguous vertebrae, or by any other operative method, clinical experience is necessary to form an unbiased opinion of its practical value. At the last session of the American Medical Association a paper was presented by the surgeon in charge of the Sea Breeze Hospital, giving his interpretation of the results of fifteen cases of tuberculous spine disease in which operation was performed by the originator of the Albee method at the above-mentioned institution. The report was extremely unfavorable, and the publication of which leads me to present my observations with the hope that other men of experience may carry the discussion farther, thus adding light on a subject of so much importance.

Unquestionably bone transplantation, as advised by Albee, marks a new epoch in the treatment of Pott's disease and is a valuable surgical asset. Surgery shows to better advantage here than in tuberculous joints elsewhere in the body; there is no danger of disseminating the infection into contiguous normal bone; no sacrifice of bone to affect shortening and it is in accordance with orthopedic principles in securing physiologic rest, thereby affecting the pathologic process.

Let it be understood that I do not favor surgical measures in every case of Pott's disease. The value of any plan of treatment in tuberculous spine disease is estimated by its effectiveness in combating ultimate deformity. Under conservative treatment recovery may be anticipated, in an average period of three or four years, with or without deformity, depending often on the region of the spine affected. We know that caries in the middle and upper dorsal region of the spine is frequently associated with great angular protrusion, whereas caries in the cervical or lumbar region, even when extensive, has little or no kyphos. This is explainable by the fact that the superincumbent weight is greatest on the bodies of the vertebrae in the dorsal region because of the normal curve of the spine being concave in front. In childhood, therefore, routine treatment should be protective except, perhaps, in middle and upper dorsal Pott's disease; but in cases in which conservative treatment has been tried

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and found impossible to control, surgical intervention is then justifiable. In adults operative measures depend on social and ecoonomic conditions. The leisure class is in a position to choose between conservative and operative treatment. On the other hand, the wage earner must regain health in the shortest possible time; therefore, conservative treatment in his case demands a sacrifice justified only by a necessity which I consider no longer exists.

Undoubtedly surgical measures in Pott's disease shorten the period of disability with a presumption of a rapid cure. But rapid cure, in the exact sense, cannot be obtained by any method of treatment in tuberculous spine disease. In comparison to conservative methods, bone transplantation followed by protective treatment shortens the duration of tuberculous spine disease many months. The early relief afforded patients from discomfort and pain following the operation is striking.

It is needless to state that bone transplantation has no direct curative action on the tuberculous process.

Bone transplant extending from first lumbar vertebra to coccyx; bodies of the fourth and fifth lumbar vertebrae destroyed.

The underlying principle is fixation of the vertebrae in order to hold the spine in the extended position so that pressure on the diseased area may be removed, thus arresting and controlling the morbid process. Success thus depends on the efficiency in which the spine is splinted. This is accomplished, primarily, by the bone graft being implanted into the spinous processes of all the diseased vertebrae and at least two contiguous vertebrae on either side. This will effectively splint the spine. A source of failure is almost invariably due to the error of implanting the graft into the contiguous vertebrae of one end only which imperfectly eliminates motion. To obviate this error it is all important that the extent of the diseased area be accurately determined by a good roentgenogram before proceeding to operation. The kyphos alone is not a sufficient guide.

External support, either casts or braces, must not be disregarded for many months following the postopera-

RESULTS OF OPERATION IN NINE CASES OF POTT'S DISEASE

Case	Duration of Disease, Years	Deformity Previous to Operation	Age at Time of Operation, Years	Vertebrae Affected as Shown by X Ray	Reasons for Operation	Date of Operation	Location of Graft as Shown by X Ray	Length of Time of Post-operative Recumbency, Months	Length of Time of Postoperative Protective Treatment, Months	Ultimate Results
1	2½	Yes	13	3 to 4 L.	Increasing kyphos	4/13	1 to 5 Lumbar	3	3½	Has no discomfort or pain; lower end of graft stands out prominently; right lateral curve of the spine above the graft.
2	3	Marked	5	3 to 4 D.	Discomfort and pain on walking	7/13	2 to 5 Dorsal	1½	3	No discomfort nor pain, and walks with ease; kyphos slightly increased.
3	?	Yes	19	7 to 10 D.	Economic	8/13	5 to 12 Dorsal	2	None	Without symptoms; no increased kyphos.
4	4	No	7	4 to 5 L.	Pain on walking; discharging sinus.	9/13	1 to 5 Lumbar	2	None	Walks with ease and is without symptoms other than sinus has not closed.
5	2½	Marked	7	11 to 12 D.	Grunting respiration; increasing kyphos	9/13	9 D. to 3 L.	2	3	Allowed up without any protection, but after one week a cast was applied because of grunting respiration; after three months cast was removed, since which time has been only slightly increased; otherwise without symptoms.
*6	3	Yes	6	7 and 8 D.	?	4/13	7, 8, 9 D.	2½	None	Four months after operation unable to walk and was placed on Bradford frame.
7	¼	Slight	20	11 to 12 D.	Discomfort and pain	12/13	10 D. to 5 L.	1½	None	After six weeks' conservative treatment became necessary because of a "slight weakness" referred to the abdomen; two months later the cast was removed, and the patient has been without symptoms; no increased kyphos.
8	1	Yes	32	12 D. to 2 L.	Economic	12/13	10 D. to 4 L.	6	None	Graft became infected and was removed; Roentgenray shows beginning bone formation connecting spinous processes.
*9	3½	Slight	18	6 to 10 D.	Pressure paralysis	3/13	6 to 12 D.	3	1½	Was paralyzed for six months following operation; then right knee gradually began to "jerk" and unable to walk; patella reflexes and ankle-clonus much increased; now on Bradford frame.

* Operated on before coming under observation of the author.

tive period of recumbency (six weeks), inasmuch as too early reliance cannot be placed on the strength of the graft. It is improbable that a firm bony union exists between the graft and the split spinous processes in this period of time. Albee, however, states that the graft becomes united by bony union in four weeks. According to Dupuytren and Wieder, there is no permanent callus formation between the ends of the transplant and the bone into which it is to be transplanted before the eighty-fifth to two hundred and fiftieth day.

In the middle and upper dorsal region of the spine, where deformity has developed necessitating a pronounced bending of the bone insert, the strain on the graft is greatest. Unless external support be given, tracings of the spine will almost invariably show an increased, rounded kyphos. In lower dorsal or lumbar Pott's disease the graft is usually straight and the strain is mostly confined to its lower end. Here again it is necessary to use external support; otherwise the lower part of the graft may not remain firmly anchored and then it stands out prominently. I am accustomed to give postoperative protective treatment at least for six months. Clinically no harm can come from too long a protection—other views notwithstanding.

This paper is based on nine cases observed in my private practice and on my services at the Cook County Hospital and the Home for Destitute Crippled Children during the year of 1913. In seven of the cases operation was performed by me and in two (Cases 6 and 9) by other surgeons. No attempt has been made to gather cases for statistics from other sources.

CONCLUSIONS

I feel warranted in stating that:

1. Surgical measures for tuberculous spine disease are a great advance over conservative treatment, but should be restricted to selected cases. Undoubtedly they shorten the period of disability.

2. Not only may existing deformity be prevented from becoming exaggerated, but also deformity itself may be prevented by surgical measures.

3. Too early reliance cannot be placed on the strength of the bone graft. It takes time for the splint to become securely fixed by permanent callus.

4. External support must not be disregarded for many months following the operation; otherwise deformity may ultimately occur.

5. Even with postoperative protective treatment for a period of six or more months, the duration of treatment is much shorter than the average duration under non-operative methods.

6. Success of bone transplantation for the cure of tuberculous spine disease depends on the proper implantation of the bone splint into the diseased and normal contiguous vertebrae. Essential to the success is the *careful protective after-treatment* for a period of months.

I wish to thank Mr. Julius Gillis, private radiologist, and Dr. Edward S. Blaine, radiologist to Cook County Hospital, for their valuable aid with roentgenograms.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. FARRELL AND JACOBS

DR. W. G. STERN, Cleveland: One question cannot be settled by animal experiments, but only by long clinical experience, and that is, can the bones of one human being be permanently transplanted into another? If the bones of one individual can successfully be transplanted to another, we have before us a means of making transplants of even greater extent and scope than the ones already shown. Hoffmeister, in Germany, for sarcoma of the upper end of the humerus, took the fibula of a cadaver and using the external malleolus as the joint-forming body, implanted the other end into the shaft of the humerus. He was able, by means of this long piece of bone, to put the muscles of the arm under great tension; and the result was eminently successful. Reports have been drifting to America, brought by word of mouth, that some of these splendid operations, done by means of transplants from one individual to another, have not been permanently successful. The bones, which apparently healed in and formed a new joint in Lexer's case, later lost their bony character, and after a year or two, could no longer be identified as bone. If this transplantation from one individual to another will succeed, the method offers a promising field in the large hospitals, from material gathered in cases of amputation, etc. I also agree that in the operation of transplantation for the cure of Pott's disease, the graft should extend a fairly long distance above and below the seat of the disease; and that the case should have mechanical support for a long time afterward.

DR. JOHN B. MURPHY, Chicago: It is pleasing to note that the position that we have taken is being confirmed, that a bone of any size, even to that of the longest bone of the anatomy, can be transplanted from one part of an individual to another part and will survive if it be aseptic. The question is not yet settled whether the periosteum and the compact bony tissue or the medulla plays the most important rôle in the regeneration of bone. It is fairly well established that the autotransplant gives the best results. In something over one hundred cases of bone transplants of all sizes, from 14 inches down, we have removed only one transplant. This shows the uniformity with which bone can be healed in. It matters little whether the bone is placed on the surface, in the compact bony tissue, or in the medulla. What we are interested in, and where we feel that work can be done by this section, is in the treatment of malignant and semimalignant lesions of bone by resections in place of amputations. Our great work is going to be that we shall be able to prevent metastasis by early resection of bone and save the extremity. The epiphyses must be preserved when this can be done, because they are important for the growth of bone. That we are not doing for tuberculosis in all portions of the body the best that we can, is definitely settled in my mind. We must do more than merely give mechanical support. Great stress has been laid on the advisability of keeping a patient with tuberculosis in activity. I consider that an error; for it lessens the opsonic index in the extremity as well as in the lung. How well satisfied are we with the management of our cases of tuberculosis of the hip on the former orthopedic basis of mobility?

DR. JOEL E. GOLDTHWAIT, Boston: The discussion has shown that bone transplants can be inserted in large pieces and that they will not be thrown off. Conservatism in the treatment of malignant bone and joint disease promises, certainly, as much as any other; because Coley's statistics reported a short time ago, showed that life was not prolonged by operation. The disease goes on, in spite of such radical measures. This method of bone transplantation offers an opportunity to do something early, when the patient is willing.

DR. M. S. HENDERSON, Rochester, Minn.: I have operated on five patients by Hibbs' method. Clinically, ankylosis was obtained. The most striking case was that of a young man 25 years of age who had a lumbar Pott's with large psoas abscess, but no sinus. After operation the abscess was aspirated, the patient gained 35 pounds and manual labor was resumed. Later he developed acute miliary tuberculosis of the lungs and died. Three other patients were apparently cured. One is too recent to report. I have operated in over thirty cases by the Albee method. We lost no transplants. In those observed long enough after operation to be fair, it would seem that ankylosis was secured. Dr. Murphy emphasizes the practicability of bone transplantation. In something over seventy transplantations we have only lost one graft.

THE SYMPTOMATOLOGY AND TREATMENT OF SEBORRHEIC KERATOSES *

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Few physicians appreciate the important part played by seborrheic keratoses in the pathogenesis of carcinoma of the skin. A material, if not absolutely essential, factor in the etiology of both basocellular and prickle-cell cancer is a peculiar quality of the skin, a quality which may be inherited but is usually acquired, and which is characterized by harshness and dryness, with more or less evidence of long-standing dry seborrhea. In the production of these cutaneous changes, age is an important, but not indispensable, factor. Long-continued exposure to strong sunlight and to sudden atmospheric changes aids in the preparatory process. The custom of applying a local descriptive term to a skin of this kind is unfortunate, for it tends only to confuse the unsophisticated. The so-called "sailor's skin" is by no means confined to those who follow the sea. Typical examples of the condition are probably far more frequent on the plains of Kansas than on the Newfoundland Banks. In discussing the subject of seborrheic, or "senile," keratoses, these facts should be borne in mind, for it is on a skin of this type that the majority of these lesions develop.

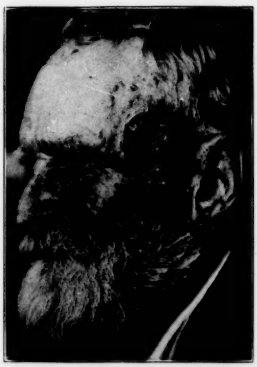

Fig. 1 (Case 4).—Keratoses of the keratoid type, and large prickle-cell carcinoma involving the skin and periosteum.

Clinically, seborrheic keratoses begin as small, round or oval, brownish macules. The sites of predilection are the face, scalp, trunk, particularly the interscapular and sternal regions, and the backs of the hands. When fully developed the growths are flat-topped, papular elevations, usually oval in outline, yellowish, grayish or brownish in color, sharply circumscribed, and covered with a firmly adherent crust which is usually greasy and velvety if the lesions are situated on the trunk or scalp, and harsh, rough and dry if they are located on the face or hands. When the crust is carefully removed its under surface often presents numerous tiny projections which formerly extended into the mouth of the follicles. Not infrequently the location of an involved area is apparently dependent on some preceding slight injury of the skin, such as a nick from a razor while shaving. The tumors never disappear spontaneously, and may persist indefinitely without change, but generally, and especially in those instances in which the growths are exposed to constant or repeated irritation of any sort, the bases of some of them undergo further pathologic change and ultimately become malignant, the resulting carcinomas invariably being of the prickle-cell type.

The histopathology of seborrheic keratoses has long been a matter of controversy. Neumann[1] found thinning and pigmentation of the prickle layer, atrophy of the derma, and hypertrophy of the sebaceous elements, with cystic changes in the hair follicles and their appended glands. Balzer[2] reported the granular layer and stratum lucidum unaffected, the presence of a decided acanthosis, hypertrophy of the stratum corneum, and enlargement of the papillae, with some perivascular infiltration. Otherwise the cutis was normal. Handford[3] found acanthosis, with associated hypertrophy of the horny layer, and there were present throughout the epidermis numerous round and oval spaces, the walls of which were lined with cubical epithelium. Pollitzer,[4] who was first to investigate the condition thoroughly, studied sections from a considerable number of lesions, some of which had been excised from a patient suffering with mycosis fungoides. He found the papillae enlarged and elongated, and containing many epithelioid cells, the majority of which were arranged alongside and parallel to the capillaries. The vessels themselves were unchanged, and the elastic fibers and sebaceous glands also were normal. There was hypertrophy of the prickle layer, with parakeratosis of the stratum corneum. The follicular orifices were filled with horny substance. The coil gland ducts were dilated and cystic, many of the cavities containing large numbers of leukocytes and degenerated epithelial cells. There was much free fat in the cutis and in the interspinal spaces of the prickle layer. Unna[5] examined a series of the growths secured post mortem from eight cases of the disease. The findings were very similar in all, and he concluded that the lesions were true soft nevi which had undergone a peculiar form of fatty degeneration, and differed from ordinary soft nevi only in their containing more fat. Hartzell[6] has recently gone thoroughly into the subject. He found in all of his specimens:

> A marked increase in the thickening of the corneous layer of the epidermis, the nuclei of the cells being still present as fairly well-stained, slender spindles. The greatest increase in thickness was about the mouths of the hair follicles and the sweat ducts, the former being widely dilated and filled with horny plugs. The granular layer had in most places disappeared, but was still well preserved about the hair follicles and sweat ducts. The rete mucosum presented considerable variation in the amount of alteration present. In the newer lesions there was but slight increase in the width of this layer, although there was always evidence of increased cell activity in the basal cells, such as numerous dividing cells and multiplication of nuclei. In the older lesions there were all degrees of increase in the thickness of the rete up to actual invasion of the corium and beginning epithelioma. In a small lesion removed from one of the patients who also had multiple epithelioma, there was a circumscribed down-growth of the rete surrounded and penetrated by a cellular infiltrate composed of numerous mononuclear leukocytes, and in the corium a moderate number of plasma and mast cells. With the exception of a decided flattening out, and in some cases the complete disap-

* Read before the Kansas City Pathological Club, Oct. 14, 1914.

1. Neumann: Atlas der Hautkrankheiten, cited by Unna: Histopathology of the Diseases of the Skin, Walker's translation, New York, 1896, p. 1164.
2. Balzer: Ann. de dermat. et de syph., 1881, p. 535.
3. Handford: Illust. Med. News, 1888, p. 293.
4. Pollitzer: Monatsh. f. prakt. Dermat., 1890, p. 145.
5. Unna (Footnote 1).
6. Hartzell: Jour. Cutan. Dis., 1903, p. 393.

pearance of the papillae, the corium presented but little alteration.

It is difficult to reconcile the conclusions of these various investigators. Inasmuch as all were skilled and experienced observers, the disparity of the pathologic reports would indicate that the question is as yet an unsettled one.

I first became particularly interested in the condition about two years ago, and since that time I have endeavored to secure some material from every case of seborrheic keratosis that came under my care. The disorder is a common one in the Middle West, but unfortunately the general public has not yet become

Fig. 2 (Case 7).—Seborrheic keratosis of the verrucose type, showing hyperkeratosis, acanthosis and inflammatory changes in the derma (Leitz, No. 3 objective, No. 4 eyepiece, 20 cm. bellows extension).

educated in the matter of biopsies; consequently I have been able to secure only thirty-four pieces of tissue from thirty-one different individuals, all of whom were private patients.

A brief summary of the case histories may be of interest:

CASE 1.—Retired farmer, married, aged 61, referred by Dr. J. N. Goodson of Kansas City. Lesions on face and trunk. Carcinoma beneath right eye. One growth excised from right temporal region.

CASE 2.—Commercial traveler, married, aged 56. Lesions on face and back. One growth excised from left cheek.

CASE 3.—Widow, aged 64, referred by Dr. Elmer Twyman of Independence, Mo. Lesions on face, scalp and back. Carcinoma near inner canthus of left eye, involving lid and the left side of nose. One growth excised from forehead, near hair margin.

CASE 4.—Farmer, married, aged 69. Numerous lesions on face and trunk. Large carcinoma on left temple (Fig. 1). One growth excised from left cheek.

CASE 5.—Lawyer, married, aged 63, referred by Dr. W. M. L. Witter of Milan, Mo. Lesions on face and back. One growth excised from region of right temple.

CASE 6.—House painter, single, aged 26, referred by Dr. Edward Asbell of Kansas City, Kan. Lesions on face and trunk. One growth excised from region of right scapula.

CASE 7.—Housewife, aged 49, referred by Dr. Jabez N. Jackson of Kansas City. One lesion on scalp, just above right temple. Growth excised (Fig. 2).

CASE 8.—Farmer, married, aged 67, referred by Dr. J. Archie Robertson of Kansas City. Numerous lesions on face. One growth excised from left cheek (Fig. 3).

CASE 9.—Ranchman, single, aged 48. Numerous lesions on face and trunk. Carcinoma on right side of nose (Fig. 4). One growth excised from right cheek.

CASE 10.—Widow, housewife, aged 58, referred by Dr. Sam T. Mead of Slater, Mo. Lesions on face and scalp. One growth excised from right side of forehead, near hair margin.

Fig. 3 (Case 8).—A typical keratoid lesion, showing horny plugs in mouths of follicles, hyperkeratosis, slight papillary flattening, and beginning inflammatory changes in derma (Leitz, No. 3 objective, No. 4 eyepiece, 20 cm. bellows extension).

CASE 11.—Engineer, single, aged 26, referred by Dr. C. D. Trask of Kansas City. Lesions on face and ears. One growth excised from upper border of left ear.

CASE 12.—Rural mail carrier, married, aged 43, referred by Dr. T. S. Blakesley of Kansas City. Numerous lesions on face and one on ball of left eye (Fig. 5). Diagnosis made, and growth excised from eye by Dr. Blakesley.

CASE 13.—Physician, married, aged 56, referred by Dr. Roger Brewster of Kansas City. Numerous lesions on trunk (Fig. 6). Two growths excised from scapular and interscapular regions.

CASE 14.—Oil operator, married, aged 34, referred by Dr. Frank J. Hall of Kansas City. Lesions on nose, forehead and trunk. One growth excised from side of nose.

CASE 15.—Commercial traveler, married, aged 47, referred by Dr. W. T. Reynolds of Kansas City. Numerous lesions on trunk. Two growths excised from left scapular region.

CASE 16.—Widow, aged 44, referred by Dr. W. T. Shelton of Kansas City. Lesions on nose and forehead. Carcinoma on right side of nose. One growth excised from forehead.

CASE 17.—Farmer, married, aged 32, referred by Dr. Peterson of Nashua, Mo. Lesions on trunk and left ear. One growth excised from left scapular region.

CASE 18.—Retired teacher, widower, aged 73. Lesions on face, ears and trunk (Fig. 7). One growth excised from left cheek (Fig. 8).

CASE 19.—Farmer, married, aged 43, referred by Dr. W. C. Lathrop of Norton, Kan. Numerous lesions on face and forehead. One brother similarly affected. One carcinoma beneath right eye, and one on right cheek. One growth excised from forehead.

CASE 20.—Electrical foreman, married, aged 27, referred by Dr. Frank Teachenor of Kansas City. Lesions on trunk. One growth excised from left lumbar region (Fig. 9).

CASE 21.—Street-car conductor, married, aged 45, referred by Dr. Will Iuen of Kansas City. Lesions on face and trunk. One brother similarly affected. One growth excised from left side of chin.

CASE 22.—Widow, aged 65, referred by Dr. C. D. Trask of Kansas City. Numerous lesions on face and forehead. One brother and one son similarly affected. Carcinoma on left cheek. One growth excised from forehead, and one from right cheek.

CASE 31.—Stockman, married, aged 37, referred by Dr. Nathan Harrelson of Kansas City. Numerous lesions on face and trunk. One sister similarly affected. Carcinomas on forehead and on right cheek. One growth excised from right temporal region.

In all but three instances (Cases 12, 26 and 30), the biopsies were performed by means of a medium-sized cutaneous punch, under local anesthesia. Liquor formaldehydi was employed as a hardening and fixing agent. About one hundred frozen sections were made. These were stained with either osmic acid or sudan III. The rest of the material was blocked in paraffin, cut serially and stained with hematoxylin and eosin. I am indebted to Dr. W. K. Trimble and his assistant, Miss Blakesley, for much of this preliminary work.

After examining sections from a dozen or more of the lesions, it was apparent that the growths could be roughly separated into three distinct groups: first, and most frequent, a keratoid variety, characterized by great corneous hypertrophy, with some parakeratosis,

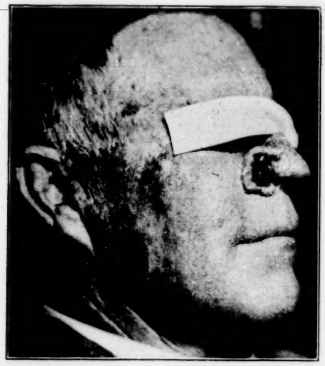

Fig. 4 (Case 9).—Seborrheic keratoses of the face, with prickle-cell carcinoma of the nose.

Fig. 5 (Case 12).—Keratosis of eyeball, with numerous keratoid lesions on face.

Fig. 6 (Case 13).—Typical example of seborrheic keratoses of the nevoid type.

CASE 23.—Street-railway pay clerk, married, aged 34, referred by Dr. Chas. B. Hopkins of Kansas City. Lesions on trunk. One growth excised from left side of trunk.

CASE 24.—Housekeeper, single, aged 34, referred by Dr. A. G. Swaney of Lee's Summit, Mo. Lesions on face and scalp. One growth excised from left temporal region.

CASE 25.—Farmer, married, aged 64, referred by Dr. N. P. Wood of Independence, Mo. Lesions on face, ear and trunk. Carcinoma on left ear. One growth excised from ear.

CASE 26.—Farmer, married, aged 63, referred by Dr. H. W. Tull of Carrolton, Mo. Lesions on face. Carcinoma on right cheek. One growth excised from right temporal region.

CASE 27.—Cattleman, married, aged 41, referred by Dr. Daniel Ross of Denison, Texas. Lesions on lower lip and on trunk. One growth excised from left suprascapular region.

CASE 28.—Housewife, aged 54. Lesions on face, scalp, trunk and left leg. One growth excised from left cheek, and one from left shin (Fig. 10).

CASE 29.—Telegraph operator, married, aged 31, referred by Dr. Ernest W. Reynolds of Bristow, Okla. Lesions on face and trunk. One growth excised from right ala of nose.

CASE 30.—Salesman, married, aged 57, referred by Dr. A. Comingo Griffith of Kansas City. Numerous lesions on trunk. One growth excised from left subscapular region.

a moderate degree of acanthosis, slight proliferative changes in the germinal layer, and more or less flattening of the papillary bodies; second, a nevoid type, which was practically identical with Unna's "naevus seborrhoeicus," and third an acanthoid or verrucose form, distinguished by considerable hyperkeratosis, very pronounced acanthosis, signs of exceedingly active proliferative changes in not only the stratum germinativum, but also at numerous other points in the rete, and enormous papillary hypertrophy. In these wart-like specimens the cutis showed inflammatory changes of a subacute nature, with capillary dilatation, extensive perivascular infiltration and small collections of leukocytes and round and plasma cells scattered through the upper derma.

As the studies progressed, the group characteristics of the three types became more obvious, until, toward the end, it was not a difficult matter to foretell accurately the histologic features of a majority of the growths even prior to excision.

Some of the more advanced keratoid tumors bore a distinct structural resemblance to early Roentgen-ray

carcinomas (as represented by both comparative specimens[7] and Wolbach's[8] description), although the keratinization of the epithelial processes extending downward into the derma was not so prominent a feature here as in tumors of the Roentgen irritation type. In the earlier keratoid lesions the most noticeable change in the cutis was the dilatation, with occasional development of cysts, in the sweat ducts. The sebaceous glands were practically normal in all three classes, despite the fact that all contained considerable quantities of free fat. The nevoid tumors were richest in this material, the acanthoid less so, and the keratoid least of all.

Of the thirty-four specimens excised, nineteen were of the keratoid variety, eleven of the nevoid and four of the acanthoid. Needless to say, not all were typical examples, but the borderline cases were so infrequent that they could safely be disregarded.

From the point of view of prognosis, the keratoid lesions were by far the most dangerous. Nine of the patients who suffered from growths of this type presented also active manifestations of carcinomatosis.

Fig. 7 (Case 18).—Seborrheic keratosis of the verrucose type, showing pigmentation and crusting. The patient's skin is dry, rough and harsh.

Both the clinical and histologic features in Case 12 were unique. So far as I know, a keratosis of this type has never before been reported as occurring on the eyeball. Prior to the removal of the entire tumor, Dr. Blakesley had scraped off a portion of the shelf-like mass and found that it consisted of elongated, cornified cells, many of which retained their nuclei. The base of the growth was exceedingly vascular, and contained many sinus-like, epithelial-lined cavities, as well as old and newly formed capillaries. There were no signs of malignancy, however, and the tumor did not recur after removal. The patient's sight was not impaired by the presence of the growth.

For purposes of comparison, sections of a small cutaneous horn from the penis were examined. The lesion was one of three which had developed from a group of acuminate condylomas just back of the glans on a man of 27, and had existed for eight months. The papillary hypertrophy, sharply circumscribed acanthosis and excessive cornification were all suggestive of a possible relationship between cutaneous horns of this character and the verrucose type of seborrheic keratoses. As Unna[9] has stated, "the preference of cutaneous horns for the seborrheic regions of the skin, the scalp, forehead, the nose, the eyelids, the glans and the scrotum is somewhat remarkable; as is the seborrheic history of many of them," and it may be that in the warty form of seborrheic keratoses we have the link connecting certain types of cutaneous horns with seborrheic keratoses in general.

In view of the fact that the sebaceous glands are apparently unaffected in all three of the varieties here described, the appellation "seborrheic keratosis" might appear, on first thought, a misnomer. The objection cannot be sustained, however, if we accept the term

Fig. 8 (Case 18).—Seborrheic keratosis of the verrucose type, showing hyperkeratosis, acanthosis and decided inflammatory changes in cutis (Leitz, No. 3 objective, No. 4 eyepiece, 20 cm. bellows extension).

Fig. 9 (Case 20).—Early seborrheic keratosis of the nevoid type, showing slight parakeratosis, pigmentation and changes in derma (Leitz, No. 3 objective, No. 4 eyepiece, 12 cm. bellows extension).

7. Through the courtesy of Dr. G. L. Harrington of Independence, Missouri.
8. Wolbach: Jour. Med. Research, 1909, xxi.
9. Unna: Histopathology of the Diseases of the Skin, Walker's translation, New York, 1896, p. 187.

"seborrheic" in the broad sense in which it is generally employed. In Unna's[10] "eczema seborrhoeicum," which is essentially identical with Elliot's[11] "dermatitis seborrhoeicum" and Duhring's[12] "seborrhoea corporis," the sebaceous glands show few, if any, changes, and many pathologists are of the opinion that the fatty character of the lesions is due solely to the material thrown off by the coil glands. Consequently, the disease is possibly more of a "syringodermatitis" than anything else. Unfortunately, dermatology is already suffering from an embarrassment of riches in the matter of nomenclature, and the wisest plan now is to stick to those terms which have met general approval and acceptance, even though we should strain a technical point or two in so doing. I, myself, must agree with Schuchardt[13] that an anomaly of secretion of the sebaceous glands is probably the essential and primary trouble in both seborrheic dermatitis and seborrheic keratosis. Otherwise why should the regions which are richest in these structures seldom escape involvement, while other localities, like the palms and soles, which are fairly a network of coil glands, exhibit the lesions of seborrheic dermatitis only occasionally, and of seborrheic keratoses never at all? Montgomery and Culver[14] have called attention to the effect of the ingestion of large quantities of butter fat on these glands, and it is not improbable that many other substances have a similar deleterious action.

Fig. 10 (Case 28).—Early verrucose lesion, showing slight hyperkeratosis and pronounced papillary hypertrophy (Leitz, No. 3 objective, No. 4 eyepiece, 16 cm. bellows extension).

TREATMENT

The earlier keratoid lesions are readily removed by frequent applications of a bland grease, such as rosewater ointment. Afterward, the occasional employment of a lubricant of this kind will prevent a recurrence, provided care is taken to avoid the use of hard water and highly alkaline soaps. Men whose faces are affected should never shave with a dull razor, and, after shaving, no soap should be allowed to remain on the skin. The nevoid, verrucose and advanced keratoid types are more resistant to treatment, and a salve consisting of salicylic acid (1 part), sulphur (1 part) and petrolatum (30 parts), as recommended by D. W. Montgomery[15] and by Stelwagon,[16] is generally required to remove the outer layers. This ointment may be applied on cloth at night, the patch being covered with a bit of oiled silk, and the whole held in place by a cross of adhesive plaster. As soon as the corneous mass is softened, it may be gently removed with a bit of cotton moistened with benzine. Of all the caustics that have been recommended for use in this condition, none, in my opinion, equals Pusey's carbon dioxid snow. One thorough freezing, with moderate pressure, for a period of from thirty seconds to one minute, is usually all that is required. The lesion is then painted with tincture of iodin, and dithymoldiiodid (thymol iodide, U. S. P.) or a similar antiseptic.

Fig. 11.—A typical example of "sailor's skin" in a woman of 70. The lesions are already showing carcinomatous tendencies.

Fig. 12.—Following the use of a salicylic acid and sulphur ointment some of the lesions healed, but the one near the thumb has developed into a typical prickle-cell carcinoma (picture taken four months after first consultation, Fig. 11).

10. Unna: Jour. Cutan. Dis., 1887, p. 449.
11. Elliot: New York Med. Jour., 1891, liii, 174.
12. Duhring: Cutaneous Medicine, Philadelphia, 1896, Part 2.
13. Schuchardt: Volkmann's Sammlung Chirurgie, 54-84 (cited by Hertzell, Note 6).
14. Montgomery and Culver: Jour. Cutan. Dis., 1912, p. 319.
15. Montgomery, D. W.: Philadelphia Med. Jour., 1898, p. 211.
16. Stelwagon: Diseases of the Skin, Philadelphia, 1914, p. 536.

applied. If a bulky dressing is objectionable, a 5 per cent. ammoniated mercurial ointment may be prescribed.

In growths that have already assumed a malignant character, the treatment is that of carcinoma of the skin. On the scalp, forehead, lips, trunk and limbs, radical excision is nearly always to be preferred. On the face, and particularly in the nasal and orbital regions, admirable results can often be obtained by the use of the Roentgen rays or radium.

CONCLUSIONS

Seborrheic keratoses are the most frequent of all forerunners of prickle-cell cancer of the skin. In their production, age and exposure to sunlight and to wind are important factors.

The lesions are of three types, keratoid, nevoid and acanthoid, or verrucose. The keratoid are the most liable to become carcinomatous.

The best plan of treatment is prophylactic. Failing this, the removal of the superficial layers of the growth by means of a keratolytic, followed by thorough freezing of the base with carbon dioxid snow, is the method of choice. Lesions which already exhibit signs of malignancy should be excised. If, for cosmetic reasons, excision is inadvisable, Roentgen therapy or radium may be tried. Under no circumstances should silver nitrate or other superficial caustics be employed.

Every person presenting the symptoms of seborrheic keratosis, particularly if the lesions be of the keratoid type, should be warned of the danger incurred by neglecting treatment. Carcinomaphobia is to be deplored, but wilful negligence is inexcusable.

Lathrop Building.

The Typhoid Epidemic at Barcelona.—An official announcement is quoted in a recent issue of *Siglo Medico* saying that after causing about 4,000 deaths the epidemic of typhoid seems to be dying out, only seven new cases having been reported in the last day or so. This is only 1 per 100,000 inhabitants. It is proposed to have a celebration "to show the gratitude of the populace to chance that has freed the city from this terrible scourge. . . ." The hotels, theaters and stores are deserted and it is hoped that the king will come to the festival and thus break up the economic crisis which is still as serious as at the height of the epidemic." A letter from a leading physician in Tortosa is published in the *Revista Clinica de Madrid*, which laments that the populace in Tortosa is now paying the penalty for the crime of the municipal authorities at Barcelona in allowing typhoid to get such a hold that 50,000 cases were officially recorded, and the only prophylactic measure proposed or employed by the authorities was to advise the people to boil the water!

TRANSPLANTATION OF THE ANTERIOR TEMPORAL ARTERY *

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Occasionally defects of the cheek, caused by accidents, or as a result of operation for malignant disease, or from gangrene, are so extensive that plastic correction is exceedingly difficult. The margins of the defect are frequently fixed to the bone and do not permit much stretching. If the flaps are taken from the arm, the character and texture of the skin is so different from the skin of the face that the contrast is very noticeable. Then, too, it is frequently necessary to have an epithelial lining on the inside of the mouth, and though a mucous membrane lining is preferable to one of skin, it is often impossible to secure mucous membrane.

Flaps from the forehead are used to remedy these defects, and are taken with the pedicle either from the temporal region or from the middle of the forehead. This, of course, necessitates cutting the pedicle later and returning it to its original position. If the anterior temporal artery is included in the pedicle, the flap is thus deprived of an important blood supply. Frequently flaps that cover defects of the cheek obtain their sole nourishment around the edges, and if a flap has also been turned in to make a lining, there is a still greater demand on the external flap for blood supply. Dunham of New York has met this objection by dissecting the temporal artery from the flap and returning the pedicle minus the artery to its original position. This, of course, is an improvement; but it necessitates two operations, and the dissection of the temporal artery from the transposed and infiltrated pedicle is more difficult than a dissection from the normal tissue at the original operation.

Fig. 1.—First step of transplantation of the anterior temporal artery with a frontal flap. Outlines of the flap on the neck and of the frontal flap, together with the incision for dissecting out the anterior temporal artery, and for burying it in its new location are shown.

On two occasions I have transplanted the anterior temporal artery, dissecting it free from its origin to the margin of the proposed flap.

The anterior temporal artery presents peculiar advantages for transplantation. It is not essential to the nourishment of the forehead or scalp, which has an abundant anastomosing blood supply. It is tortuous and when dissected free, even with some surrounding tissue, it may be straightened and will reach much farther than before dissection. This permits placing the flap in positions distant from the origin of the artery, and maintenance of an abundant blood supply.

The patient should be prepared for rectal anesthesia according to the method of Gwathmey. The bowels

* Read at a meeting of the Southern Surgical and Gynecological Association, Dec. 15, 1914, at Asheville, N. C.

are opened by a dose of oil the night before, followed by soap-suds enemas from two to three hours before the operation. An hour before the operation a suppository of from 5 to 10 grains of chlorbutanol is given. A hypodermic of ¼ grain of morphin and 1/120 grain of atropin is administered half an hour before the operation, and the injection of oil and

Fig. 2.—The flap in the neck has been dissected free and drawn under the bridge of skin separating its base from the defect in the cheek. The artery has been partially dissected. At *A* is shown a section of the artery with ligation of posterior temporal artery when necessary to secure greater length.

ether is begun slowly about ten minutes later. The mixture consists of pure olive oil and ether, varying from equal parts in children to three parts of ether and one of oil in patients difficult to anesthetize. In adults, usually two parts of ether to one of olive oil is a satisfactory mixture. The amount injected is 1 ounce of the mixture to every 20 pounds of body weight, but in any case it should not exceed 8 ounces of the 75 per cent. solution of ether in oil. This is given slowly in the room, with the patient turned on his left side, and should take from five to ten minutes. The patient usually goes under the anesthetic gradually. If anesthesia seems profound, especially as indicated by cyanosis and disturbance of the respiration or a bad pulse, some or all of the mixture can be withdrawn through a rectal tube. About five minutes before the operation is concluded all of the mixture is withdrawn, the rectum and sigmoid are irrigated with cold water, and several ounces of pure olive oil are slowly injected and allowed to remain. This anesthesia in my hands has been most satisfactory for surgery of the neck, for plastic work about the face, and particularly for such an operation as transplantation of the anterior temporal artery.

The cheek is prepared for the new flap by trimming away the scar tissue along the margins of the defect and by undermining the skin slightly. The position of the flap to be transplanted is outlined on the forehead with the point of a knife, going as near to the hair line as possible. An incision is made over the region of the anterior temporal artery, extending from its origin to the point at which the artery enters the proposed flap. This incision should be straight, no matter what the course of the artery. Great care is taken not to injure the artery and not to grasp it with forceps. It can be easily handled by picking up the tissue around it with delicate thumb forceps. Considerable tissue is included with the artery in order not only to avoid injury to the artery, but also to preserve its nerve supply. After the artery has been freed, the flap is cut and placed in position. This gives an idea where the artery shall be buried (Figs. 1, 2, 3 and 4). The flap is covered with cloths wrung out of warm salt solution and an incision for burying the artery is made just through the skin. The margins of this incision are undermined freely, but not too deeply. In this way the branches of the facial nerve are not injured. The flap is placed in position and fastened with a few sutures. It should not be sutured too tightly, because the flap has too much nutrition; and unless there is some point where the excess of blood can ooze out for the first day or two, the tension in the flap from the arterial pressure may be so great as to cause partial necrosis. This, in fact, is the chief danger, not too little but too much blood supply. If it is necessary to have an epithelial lining, a flap may be turned up from the neck and sutured with the skin side toward the cavity of the mouth before the anterior temporal artery is transplanted, or mucous membrane from the tongue can be used, as suggested by Willard Bartlett. The illustrations show the manner of doing this.

By the second day the flap is swollen and becomes a dark purple color. If it is too tense, every few hours a sharp knife can be inserted along the edges of the flap to scrape it a little so as to promote bleeding and relieve the tension. After a week the swelling begins

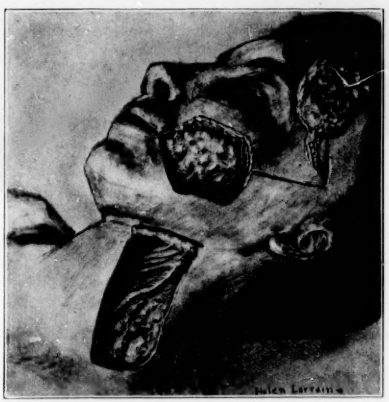

Fig. 3.—The flap from the neck has been sutured in position. The anterior temporal artery and frontal flap have been freed, and are ready to be transplanted.

to disappear, and new venous capillaries drain away the blood. The efficiency of the artery can be demonstrated months after the operation by pressing on it and noting the change in color of the flap.

In two cases in which this operation was done the artery has remained patent and is pulsating several months after the operation. In the first case, all of the flap took. In the second, a middle aged woman in

poor health, about two-thirds of the flap sloughed away on account of excessive passive hyperemia.

REPORT OF CASES

CASE 1.—Mr. W. H. D., aged 22 years, was injured, Feb. 2, 1914, by a shotgun, while trying to quell a disturbance among

Fig. 4.—The anterior temporal artery with the frontal flap has been transplanted and the flap sutured in position. The raw surface left on the forehead has been diminished by sutures at its angles.

the laborers of a mine, of which he was superintendent. The gun was discharged at short range and blew out his left eye, a good portion of the left maxillary bone and the septum of the nose, together with the soft tissues over the cheek. A large cavity was left connected with the nasal fossa. This was closed by transplanting from the forehead a flap with the anterior temporal artery. The technic was as described above. All of the flap took.

CASE 2.—Mrs. S., aged 47 years, was referred to me for a recurrent cancer of the cheek. She had been operated on a few months before by another surgeon, and as recurrence was prompt and the glands of the neck were involved, the prognosis seemed bad. A block dissection was first done on the upper part of the neck, removing glands, fat and fascia in one mass. The cancer in the cheek, which was about an inch and a half in diameter, was then excised with a Paquelin cautery. The defect was, of course, extensive and the deformity great. A flap of skin was turned under as shown in the accompanying illustrations, and sutured to the wound with the skin surface inward. The anterior temporal artery with a flap from the forehead was then transplanted as in the previous case. The flap became purple and tense, but on scraping its edges and letting out some blood, its color would again become normal. The growth of capillaries was poor, and about two-thirds of the flap sloughed off on account of the intense passive hyperemia. To the well-nourished remnant, however, flaps from neighboring tissues were later attached and grew satisfactorily.

Infant Mortality as an Index to Social Welfare.—Sir Arthur Newsholme, the eminent English statistician, says that infant mortality is the most sensitive index we possess of social welfare. And then he adds: "If babies were well born and well cared for, their mortality would be negligible. The infant death-rate measures the intelligence, health and right living of fathers and mothers, the standards of morals and sanitation of communities and governments, the efficiency of physicians, nurses, health officers and educators."—*Bull. Chicago School of Sanitary Instruction.*

THE PYLORUS AFTER GASTRO-ENTEROSTOMY FOR CONGENITAL PYLORIC STENOSIS

A REPORT ON ITS CONDITION TWO HUNDRED AND FIFTY-SIX DAYS FOLLOWING THE OPERATION

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There have been but few opportunities of examining the condition of the pylorus at any great length of time after an operation for the relief of the symptoms associated with congenital pyloric stenosis. In many of the cases which terminate fatally, death has occurred as a direct result of the operation or so soon that no regressive changes in the hypertrophied muscle could have been expected. Roentgen findings would seem to indicate that the pylorus never becomes patent, even after successful gastro-enterostomy. If the pylorus is permanently occluded, the indication for surgical treatment becomes imperative, and there should be no attempt at medical treatment. Cautley and Dent state that all patients with true congenital pyloric stenosis die before reaching the age of 4 months unless operated on. Heubner, Starck, Bloch and Bendix have between them reported seventy-one cases treated medically with sixty-six recoveries. To explain the differences in the results of treatment, it has been suggested that there are two types of cases, one a true congenital hypertrophy, the other a spasm of the pylorus, which could be overcome by lavage and diet.

Fig. 1.—Cross-section through the pylorus, showing hypertrophied musculature and connective tissue. Mucous membrane is thrown into folds. It is redundant, and if the pressure of the hypertrophied muscle were removed, the lumen of the pylorus would be reestablished. Pyloric orifice reduced to small slit, through which a small probe may be passed.

This case is reported because it would seem to indicate that the stenosis associated with congenital hypertrophy of the pyloric sphincter persists even after ideal conditions have been provided for rest of the pyloric sphincter by a well-functioning gastro-enterostomy.

L. A., a male baby, aged 2 months, was admitted to the Presbyterian Hospital, Nov. 11, 1913. The child had been breast fed up to a month before admission. Vomiting commenced in the fourth week and has recurred after almost every feeding. The bowels have moved only every second or third day, a glycerin suppository or enema being required. There has been a progressive loss of weight. The baby is small and has a dry, weazened appearance. Nothing especial was found in the general examination. Whenever the child was given water or milk, a distinct enlargement of the epigastrium was noted. Peristaltic waves could be made out, but no distinct tumor at the pylorus could be found. Vomiting occurred soon after the ingestion of food, and was propulsive in character. Examination of the stomach contents removed by a tube revealed a total acidity of 10, free hydrochloric acid 9, combined hydrochloric acid 1. Hemoglobin was 85 per cent., red blood-cells 4,840,000, leukocytes 8,000.

Feeding was commenced immediately after the operation, and a progressive gain was noted. The baby weighed 6 pounds and 11 ounces, December 2 — eighteen days after the operation — a gain of 1 pound and 11 ounces. The baby was discharged, December 17, weighing at this time 6 pounds and 12 ounces.

The baby did well after leaving the hospital, but was brought back March 24, 1914. During a few days before admission he had an attack of difficult breathing. Fever, cough and labored breathing had been noted. Vomiting had not occurred at any time. Percussion revealed dulness over the upper lobe of each lung posteriorly. Resonance was more impaired over the right upper lobe. Bronchial breathing and moist and crepitant râles were heard over the area of dulness. A Roentgen examination of the chest over the right upper lobe revealed a shadow, but no pus was found when a needle was inserted.

The baby when admitted to the hospital the second time weighed 9 pounds and 5 ounces. The weight reached 8 pounds and 9 ounces, April 14. Following this there was a rapid gain, and April 24 the baby weighed 9 pounds and 9 ounces. No vomiting was noted, and the gastro-enterostomy opening seemed to be working perfectly, judging from the rapid gain in weight and absence of digestive disturbances. The pneumonia continued from March 24 to April 8, when the temperature became normal. During most of this time the temperature at night reached 104 or 105.8 with a morning remission of 2 degrees. The baby left the hospital April 28, 1914.

Fig. 2.—Picture taken half an hour after bismuth meal. A small amount of the bismuth has passed into small intestine.

Fig. 3.—Picture taken one and one-half hours after bismuth meal, showing marked retention. Some bismuth has passed into small intestine and the shadows are more marked than in preceding picture.

Fig. 4.—Picture taken seven days after operation, showing food passing through gastro-enterostomy orifice.

Urinalysis revealed some nucleo-albumin, but was otherwise negative.

A Roentgen examination of the stomach after a bismuth meal revealed marked retention, although small shadows were seen in some of the intestinal loops.

The findings were typical of congenital pyloric stenosis, and an operation was performed Nov. 14, 1913, three days after the child entered the hospital. Under ether anesthesia a midline incision was made in the epigastrium. When the peritoneum was opened an enormously distended and tense stomach popped out. The pylorus was enlarged — it was the size of the terminal phalanx of the middle finger — and was white, somewhat edematous and hard. It had the characteristic appearance of the enlargement associated with congenital pyloric stenosis. The stomach was so tense that it could not be manipulated easily in performing a posterior gastro-enterostomy, and therefore it was punctured as soon as the transverse mesocolon was cut through. The punctured wound was then closed with a purse-string suture, as it could not be made to come easily in the line of the gastro-enterostomy. The ordinary posterior gastro-enterostomy was performed without any trouble.

The baby was brought to the hospital the third time, July 28, 1914. The symptoms at this time were high fever, cough, difficult breathing, pain in the chest and slight convulsive attacks. Illness began two days before entrance with restlessness, slight cough and rapid breathing. The weight at this time was 10 pounds and 4 ounces. Respirations were labored, rapid and grunting. The breathing was mostly abdominal. Physical examination revealed consolidation of almost the entire right lung and of the left upper lobe. Blood count taken at this time revealed: red blood cells 4,750,000, leukocytes 19,500.

The baby died a few hours after entering the hospital, and at the necropsy the following anatomic diagnosis was made: Lobar pneumonia. Passive hyperemia of posterior portions of the lungs. Left fibrinous pleuritis; hyperplasia of the tracheobronchial lymph-nodes; passive hyperemia of the

spleen; moderate edema of the brain; marked diminution of the yellow color in the adrenal cortices; acute diffuse parenchymatous nephritis. Right obliterative pleuritis. Pyloric stenosis; healed gastro-enterostomy.

When the abdomen was opened the stomach was found to be of normal size. At the pylorus an enlargement was found which was of approximately the same size and consistency as that found at the operation. From the duodenal side, the enlargement projected into the lumen of the bowel

Fig. 5.—Picture taken six months after operation, half an hour after bismuth meal.

much as the cervix of the uterus projects into the vagina. When the stomach was opened, the lumen of the pylorus was found to be greatly reduced in size, and surrounded by a rigid wall. A fine probe could be passed through the opening. The gastro-enterostomy orifice was in the pyloric antrum, about 1 inch to the cardiac side of the pylorus. It measured about an inch in length. A linen suture projected into the cavity of the stomach. This had in greater part sloughed through the walls of the stomach, but still remained attached at some points.

Histologic examination of a cross-section of the pylorus revealed enormous hypertrophy of the circular muscular coats. The hypertrophy was not confined to the circular coats alone, for the longitudinal muscles also seemed to have undergone a hypertrophy. The connective tissue bundles were also larger than normal, and seemed to be involved in the process. The mucous membrane was thrown into folds and seemed to be redundant. It was not contracted, and apparently it was merely compressed by the surrounding hypertrophied muscular tissue. If a wedge of muscle were excised and compression removed, the pylorus would undoubtedly become patent. The fact has been taken advantage of in some cases in which the operation which has been performed has merely consisted of excising a piece of the hypertrophied muscle, down to the mucous membrane, to permit of its expansion. In some of the cases in which this procedure has been practiced the pylorus has remained patent and the child has developed normally.

Notwithstanding that a sloughing suture was found in the gastro-enterostomy orifice, food was apparently passing through it freely, for the child had not vomited, except occasionally during the first two days following the operation. There was no induration about the line of suture and no adhesions between the viscera and surrounding structures. Apparently the gastro-enterostomy was functioning perfectly.

A Roentgen examination of the stomach following a bismuth meal five months after the operation was performed indicated that all the food was passing throughh the gastro-enterostomy orifice. This has also been the case in which a study has been made of a large series of postoperative cases observed by Scudder, Richter and others.

This case, with others which have come to necropsy some months after operation, such as those reported by Morse, Murphy and Wohlbach and Walton, show that a congenital pyloric stenosis associated with a hypertrophy of the musculature and connective tissue about the pylorus is permanent, and is not relieved after a gastro-enterostomy which functions perfectly.

The case reported by Morse, Murphy and Wohlbach came to necropsy six and one-half months after operation, and the one observed by Walton seven months after. In both instances the condition of the pylorus was the same as at operation, and in Walton's case the pylorus was water tight.

As the stenosis is permanent and not relieved when the pylorus is put in a condition of at least partial rest by a gastro-enterostomy, it would seem that attempts to relieve this stenosis by gastric lavage and medical treatment were futile. The diagnosis once established, the indication for treatment, which is surgical, is established. The high mortality associated with the early cases was due to the poor condition of the children when operated on. Posterior no-loop gastro-enterostomy is the most satisfactory operation; although excision of a wedge of the hypertrophied muscle down to the mucous coat, permitting of expansion of the mucous membrane, seems to give good immediate and late results.

Gastro-enterostomy is well stood by infants, if performed rapidly and without much trauma. We have

Fig. 6.—Picture taken six months after operation, two hours after bismuth meal, showing amount of food passing into small intestine through gastro-enterostomy orifice.

had five cases with no deaths. In all cases the children have developed normally.

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Public Interest and Public Sanitation.—"No sanitary improvement worth the name will be effective whatever acts you pass or whatever powers you confer on public officers unless you create an intelligent interest in the public mind."—*Bulletin of the Department of Health, City of Winnipeg.*

THE SERUM TREATMENT OF HYPERTHYROIDISM

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The physiologic and chemical studies of recent years have established the probability that the function of the thyroid gland is to prepare an active substance or hormone which is essential to the health of the organism. This substance probably is protein in character and contains iodin in chemical combination. This active substance probably forms a large portion of the colloid stored in the aveoli of the gland, and its physiologic activity is proportioned roughly to the iodin content. Under physiologic conditions only a sufficient amount of this hormone finds entrance to the circulation to meet the normal needs of the tissues, and recent work in this laboratory indicates that the control of this absorption is, at least in part, a function of the nervous system. When the gland for various reasons, which will not be discussed, becomes overactive, its secreting cells multiply, its circulation increases, the store of reserve material is drawn on in excess and we have a train of symptoms known as hyperthyroidism.

If there is one fact established regarding the disease it is that the thyroid plays the predominant rôle in the production of symptoms. The circulating blood probably contains an excess of the peculiar active protein supplied by the gland, and the tissues react to it. To no small degree the disease may be regarded as a toxemia, and the source of the toxin is to be found in the excess of thyroid secretion excreted into the blood from the overactive gland. The pathologic studies of recent years have indicated that in cases which come to necropsy other glandular structures show lesions, but we have little information to enable us to determine to what degree these may be the cause or an effect of the thyroid disturbance. The pathology of the thyroid is so constant, the clinical symptoms are so closely similar to the physiologic effects produced by overdosing with thyroid secretion, and the therapeutic measures which have secured the most relief all point so strongly to the thyroid origin of the symptoms of the disease that it has been accepted as the basis for the serum treatment. It is not the purpose of this paper to enter into a prolonged discussion as to the nature of the disease; therefore no elaborate attempt will be made to defend the principle just announced. Certain well-authenticated observations point almost incontrovertibly to such a conclusion. These observations may be summarized as follows:

1. The gland is enlarged. It has a much increased blood supply and histologically shows marked evidence of an increase in the total amount of secreting epithelium.

2. The symptoms of the disease, such as loss in weight, increased heart action, weakness, increased oxygen absorption, etc., can be imitated by giving to normal persons large amounts of thyroid preparations.

3. Removal of the gland or a diminution of its blood supply by surgical means relieves the condition, while many observations show that these patients are in most cases more than usually sensitive to thyroid administration.

The gland, therefore, is overactive. The function of the gland is not subserved within itself. The secretion prepared in the gland must reach distant organs and tissues. If the gland is overactive and an additional amount of the active secretion, which is chemically an iodized protein, reaches through the medium of the blood supply the tissues which it stimulates to unusual activity, we have the complex of symptoms which we recognize as exophthalmic goiter. The blood in exophthalmic goiter, therefore, must contain an unusually large quantity of the active secretion prepared in the thyroid gland. When this secretion is present in the blood within normal limits, the physiologic activity alone is served. When, on the other hand, excessive quantities are present, pathologic conditions are produced.

The purpose of the serum treatment is to prepare in an alien species of animals a serum having special antagonistic properties to the human thyroid secretion. The injection of this serum into a patient having exophthalmic goiter provides him with a ready-made antagonist to a complex toxic substance circulating in his blood.

The first preparation of the serum was a direct result of some experiments which I made in 1905. The purpose of these experiments was to determine whether it was possible to prepare an antiserum from the nucleoproteins of an organ which would have a more specific action than a serum made by inoculating an emulsion of the whole organ. (The literature in regard to the specificity of cytotoxic serum is summarized in the forthcoming fifth volume of Forchheimer's therapeutics by Dr. Richard Weil[1], so that only the arguments of particular interest will be given here.)

In 1905 I reported the results of a series of experiments with immune serums developed by injections of nucleoproteins. These experiments gave evidence of specific cytotoxic action, more definite than any which had been published previously. At the Toronto meeting of the British Medical Association, I read a second short paper dealing with the subject. Since these results have been made the basis of a therapeutic method, and since the validity of the observations has been called in question in the minds of many by the experiments of Pearce, I wish to review the situation and present reasons for adhering to the belief expressed in my first paper on this subject, namely, "Such a thing as absolute specificity under all conditions has never been demonstrated and probably never will be, but it is possible to make a serum which will act primarily on a given organ."

Since the publication of the papers referred to above, many experiments with nucleoprotein serums have been made in this laboratory and have confirmed the position originally taken. The method of preparing the nucleoprotein has been practically the same as that outlined in my first paper, with the exception that blood-free organs have been used, and the prepared proteins have been preserved for injection by freezing rather than by chlorofrom or by drying.

If attempts are made to duplicate these results, I suggest that the method I have outlined for preparation of the proteins be followed. Pearce followed what he conceived to be an improvement, namely, the boiling of the hashed organ in alkaline salt solution previous to its filtration. This procedure undoubtedly

1. Forcheimer: A System of Therapeutics, v. D. Appleton & Co., New York.

hastened the filtration time, but it destroyed the biologic character of the protein. It is known that many specific enzymes cling to nucleoproteins in their solution and precipitation; these would be destroyed by boiling. An excellent instance of the destruction of the specific character of a nucleoprotein by boiling may be seen in the case of the nucleoprotein of the parathyroid gland, which, when freshly prepared, is effective in relieving the symptoms of parathyroid tetany, but which is absolutely useless for this purpose if it has been boiled. Since the publication of Pearce's paper, I have made experiments in which the prepared nucleoprotein was divided into two portions for inoculation, one portion boiled and the other unboiled. The unboiled protein was effective, but I have never been able to get an active serum with the boiled protein. With the exception of the means of preserving the protein, the same methods have been employed in the production of the serum as were outlined in the previous papers. I quote from one of the former papers certain observations regarding the difficulties to be encountered.

To get the best results the protein should be freshly prepared before each inoculation. Considerable difficulty was encountered in the failure of a large percentage of the animals to produce a highly active serum, even though they had the best of care and were inoculated with satisfactory proteins. For instance, out of a lot of five rabbits inoculated with liver nucleoproteins, only one produced a highly active serum; of four sheep inoculated with thyroid proteins, only one produced an active serum. My experience in this matter has led me to the conclusion that it is more difficult to form antibodies to nucleoproteins than to globulins or albumins.

EVIDENCES OF SPECIFICITY

The evidence on which I draw the conclusions of specificity is based on precipitation, agglutination, absorption experiments and on the effects of animal injections.

The Precipitin Reactions.—These are specific except in high concentration, and here the relative speed and completeness of the reaction shows a decided preference of the serum to unite with its specific antigen.

In Tables 1, 2 and 3 are shown the reactions of different serums made against human nucleoproteins as antigen.

TABLE 1.—ACTION OF THYROID NUCLEOPROTEIN SERUM ON THYROID, KIDNEY, SPLEEN, LIVER AND LYMPH-NODE NUCLEOPROTEINS; HUMAN PROTEINS

	10 Min.	30 Min.	3 Hrs.	24 Hrs.
Thyroid nucleoprotein....	+	++	+++	+++
Kidney nucleoprotein.....	—	—*	?	+
Spleen nucleoprotein	—	—	—	+
Liver nucleoprotein.....	—	—	+?	+
Lymph-node nucleoprotein.	—	—	+	+

TABLE 2.—ACTION OF KIDNEY NUCLEOPROTEIN SERUM ON THE SAME NUCLEOPROTEINS AS IN TABLE 1

	10 Min.	30 Min.	3 Hrs.	24 Hrs.
Thyroid nucleoprotein....	—	—	—	—
Kidney nucleoprotein	+	++	+++	+++
Spleen nucleoprotein	—	—	?	+
Liver nucleoprotein	—	—	—	?
Lymph-node nucleoprotein.	—	—	±?	+

TABLE 3.—ACTION OF THE HOMOLOGOUS SERUM ON EACH NUCLEOPROTEIN AT THE END OF THIRTY MINUTES

	Thyroid Serum	Kidney Serum	Spleen Serum	Liver Serum	Lymph-Node
Thyroid nucleoprotein.	++	—	—	—	—
Kidney	—	++	—	—	—
Spleen	—	—	+	—	±?
Liver	—	—	—	++	—
Lymph-node	—	—	±?*	—	++

My former colleague, Dr. P. A. Shaffer, has confirmed my results on the specific precipitin and agglutinin reactions obtained by nucleoprotein serums, and I am able to quote one of his tables (Table 4) in support of these statements.

TABLE 4.—RESULTS OBTAINED IN AGGLUTINATION AND PRECIPITATION REACTIONS WITH SERUM DEVELOPED FROM NUCLEOPROTEIN AS ANTIGEN

Liver Suspension

	20 Min.	30 Min.	1 Hr.	16 Hrs.
Kidney nucleoprotein serum.	—	—	—	—
Liver nucleoprotein serum..	—	—	+slight	++

Kidney Suspension

	20 Min.	30 Min.	1 Hr.	16 Hrs.
Kidney nucleoprotein serum.	+slight	+	+++	+++
Liver nucleoprotein serum..	—	—	+slight	++

Liver Nucleoprotein

	20 Min.	30 Min.	1 Hr.	16 Hrs.
Kidney nucleoprotein serum.	—	—	+very slight	+
Liver nucleoprotein serum..	+slight	+	++	+++

Kidney Nucleoprotein

	20 Min.	30 Min.	1 Hr.	16 Hrs.
Kidney nucleoprotein serum.	+slight	+	++	+++
Liver nucleoprotein serum..	—	—	+	+

The Agglutination Reaction.—This reaction closely resembles the agglutination reaction which is used so much in bacterial immunity work. The emulsion of fine organ particles is prepared as follows:

The tissue is ground in a fine hashing machine and the pulverized mass suspended in normal saline. This suspension is centrifugated in a high speed machine with the result that the finer particles come down at the top of the sediment. These are removed by a pipet, suspended in salt solution and the suspension filtered through cotton; such an emulsion will be found to be serviceable for the flocking or agglutination reactions. The reaction is highly specific.

TABLE 5.—REACTION OF THYROID ANTISERUM ON EMULSION OF THYROID, KIDNEY, LIVER, SPLEEN AND LYMPH-NODE

	5 Min.	10 Min.	20 Min.	3 Hrs.	24 Hrs.
Thyroid	+	+++	+++	+++	+++
Kidney	—	—	—	+	+*
Liver	—	—	—	—	—?
Spleen	—	—	—	—	—?
Lymph-node .	—	—	—	—	—?

* At twenty-four hours the kidney showed a mild positive agglutination, but the others were no greater than controls.

Agglutination reactions of this sort have been obtained by a variety of serums, and with active serums the specific character is marked, as is shown in Table 5. The reaction is more readily carried out than the precipitin reaction, for the success of the latter depends on the use of perfectly fresh nucleoproteins and also on a neutral reaction. If the reaction is too alkaline, as is likely to be the case unless especial care is exercised, no precipitin reaction will be obtained, even with highly active serum.

Absorption Experiments.—In addition to the foregoing reactions, absorption experiments have been tried as follows:

The serum was mixed with finely hashed muscle tissue from the same animal species as the antigen from which the serum was developed; that is, serum developed by the injection of dog kidney nucleoprotein, was absorbed by finely chopped dog muscle. The mixture was allowed to remain in the incubator for fifteen minutes and was then transferred to the refrigerator for three hours. At the end of this time the extract was centrifugated and filtered, and the clear serum thus obtained was used in the same kind of precipitin and agglutination experiments as outlined above, with the result that both reactions still occurred, though they were somewhat weaker than before, but they had a more specific char-

acter. The common factors had been absorbed, but the specific ones remained. Such absorbed serum is not hemolytic, but retains its power of acting on the specific antigen.

Animal Inoculation.—The most searching and conclusive method of demonstrating the specificity of the serum, however, is by means of animal inoculation. In my first paper was published evidence to show that serum developed from the selected antigen had a markedly special action on its appropriate organs. The nephrotoxin caused acute nephritis, while the hepatotoxin caused focal necroses and general granular and fatty degeneration of the liver. These lesions were acute, and caused the death of the animal.

In attempting to repeat these animal experiments with an inactive serum which he had prepared by a faulty method, Pearce drew the conclusion that "such serums have mildly toxic properties acting in a general way and affecting especially the principal excretory organ, the kidney." He admits, however, that it is difficult so to explain the severe albuminuria which I described.

I call attention again to the fact that, on the intravenous injection of the serum, an immediate reaction occurs which is much more marked than occurs with the same quantity of normal serum. This general reaction is evidently an expression of the general toxic character of the serum. It passes in a few hours, however, and the next day the animal is normal. The specific effects which prove serious are not manifest for several days, even though the serum has been given in one injection, and although the lesion may go on to a fatal termination.

Another point of interest is to be found in the fact that not all animals react alike to active serum. A serum which causes an acute fatal nephritis in one animal may cause in the same dose a milder lesion in another animal. Two dogs were given the same dose of an active hepatotoxin; one died in eight days, while the second, although severely ill, recovered after a period of two weeks.

The results which have been cited above appear to me to warrant the use of the term "special" or "specific" in their description. It is admitted that the work requires special attention to the technic, but I believe that other investigators can duplicate the results cited.

THE SERUM

The thyroid lends itself to the production of such a serum for the reason that in this gland there is stored in the alveoli a large amount of a protein peculiar to the organ, and with a peculiar chemical structure as evidenced by its remarkable selective affinity for iodin. This protein is, therefore, sharply differentiated from proteins to be found in other organs and should serve as a suitable antigen for the production of a specific serum. The review of the literature on this subject given in the chapter by Dr. Weil shows that special cell products produce antiserum having a higher degree of specificity than can be obtained by other animal antigens. Experiments showed that such a serum had highly specific properties as evidenced by its precipitin and agglutinin reactions. A serum which would agglutinate completely an emulsion of thyroid in five seconds would produce a doubtful reaction in a kidney or liver emulsion at the end of an hour. Because of the biologic specificity of protein it is necessary to use human glands in the preparation of serum for therapeutic use.

The method of preparing the serum is as follows:

Human thyroid glands are carefully trimmed free from all connective tissue, and thoroughly comminuted by a special machine. The comminuted mass is suspended in from three to four times its volume of physiologic salt solution made alkaline by the addition of 5 drops of a 10 per cent. solution of sodium hydroxid to each hundred cubic centimeters of the saline. After shaking on a machine for three hours the extraction is continued in the refrigerator for twenty-four hours additional. The extract is strained through gauze to remove the coarser particles and then filtered through paper. To the filtrate a few drops of 10 per cent. acetic acid is added and the whole heated on a water bath to 44 C. (111.2 F.). Under these conditions an abundant precipitate is formed which is thoroughly washed by decantation with acid physiologic salt solution. The washed protein is filtered out and dissolved in alkaline physiologic saline solution. The protein content is estimated and the solution diluted to 1 per cent. strength. This solution of human thyroid protein serves as the antigen.

Intraperitoneal injections of this solution are given to sheep at weekly intervals with gradually increasing dose until from 125 to 150 c.c. of the solution are given at each injection. After six injections the animals are bled, the serum allowed to separate and prepared for injection by testing its agglutination reaction, and filtration through a Berkefeld filter. The serum is sealed in ampules containing 1 c.c. to preserve it for injection.

GENERAL PRECAUTIONS

Certain precautions must be followed in administering the serum if its beneficial effects are to be fully realized. Preeminent among these are the matters of dosage and frequency of injection. It is true with this serum as with all others used for passive immunization that the magnitude of the dose best suited to afford relief varies with the clinical condition. With some mild cases of diphtheria, 2,000 units at a single injection may be sufficient, while with the others from 10,000 to 15,000 units in successive injections may be necessary. As a rule the first injections of the thyroid antiserum are borne well without local or systemic reaction of any moment. One occasionally encounters a case, however, which is unusually sensitive, and the first injection if not carefully proportioned may cause a very marked reaction at the site of injection, evidenced by a brawny swelling which may extend below the elbow, heat, redness and pain. Some general reaction accompanied by fever, nausea and general malaise is also shown. These cases are unusual, and nearly always are found to occur in neurotic persons only mildly affected by the disease. In the severe toxic forms of the disease I have at times given three injections of 1 c.c. each during the first twenty-four hours of the treatment. However, it is best as a rule to begin with a small dose, not more than ⅓ c.c., and observe its reaction before increasing the dose. A suitable method to follow in beginning the treatment is outlined below. The best site for the injection is a point midway between the elbow and shoulder on the outer aspect of the arm. The injection should be made into the subcutaneous areolar tissue. For the first injection give 5 minims (⅓ c.c.). Immediately after the injection is made apply hot compresses at the site and continue them for one hour. Following this treatment apply a wet dressing of 50 per cent. alcohol. There may be no local reaction, whatever; in the majority of cases there is a localized area of tumefaction, the skin is slightly reddened, hot and sensitive. This reaction develops in from three to seven hours to its full height and then subsides to a normal condition within a few

hours. If the local reaction is negative or very mild, a second injection may be made the following day in the other arm, giving a dose of from 7 to 8 minims. The site of injection should be treated as before. The local conditions being favorable, the third injection may be made on the third day of the treatment in the first arm injected, giving a dose of from 10 to 12 minims. With a favorable local reaction the following doses should be of a full tube of the serum every second day, using alternate arms for the site of injection. In the very unusual cases the first reaction is severe and does not subside promptly. In such a case one should wait until the primary reaction has entirely subsided and then begin again with a smaller dose, from 2 to 3 minims of the serum. It is not wise to repeat the injections until the previous reaction is nearly if not entirely subsided. If this precaution is not observed, the reactions become progressively more severe, and not only is there a very troublesome reaction at the point of injection, but the previous reaction areas light up again and both arms become much swollen and intensely inflamed. A somewhat similar reaction has been observed by Gay to follow repeated injections of diphtheria antitoxin.

In some instances the smaller doses of serum are well taken and no disturbing reaction occurs until four or five injections of a full tube have been given. Then each injection causes an increasing reaction, and if continued at the same interval as before, a condition of great discomfort to the patient follows. The arm may show a brawny, painful inflammation extending from the shoulder to the wrist. It may have much of the appearance of erysipelas, and often the physician who first sees the reaction fears a severe infection. Wet dressings of ice water, the lotion of lead and opium, or 50 per cent. alcohol afford the most relief. The same rule is to be followed in such cases. Allow the local reaction to entirely subside and then begin by small doses. *It should be recognized, however, that in the majority of cases no disturbing reaction occurs; there is some local infiltration and a little heat which subside within a few hours.*

The question of a possible danger from anaphylaxis may be considered. In the beginning of the serum treatment, before the nature of and danger from anaphylaxis were appreciated, and when much larger doses of the serum were given without any relation to the time element, we had a few reactions which were undoubtedly anaphylactic in character. About ten to fifteen minutes following the injection there occurred a sensation of suffocation, the skin of the whole body itched intensely and became reddened, and particularly about the face, became edematous. The reaction was very distressing to the patient but passed in a comparatively short time. If the directions given above are followed, no danger from such a cause will arise. I have seen a few reactions of the type of local anaphylaxis described by Arthus. These never occur until a few previous injections have been given. Instead of a diffuse swelling and infiltration there is a small area of intense reaction immediately at the point of injection, and this reaction has all the characteristics of a small abscess. These rarely occur and the physician is inclined to conclude that his technic has been faulty or that the serum has been infected. In a few instances it has been advisable to open the abscess, while some of them have pointed and opened spontaneously. The contents have been sterile in every case that I have seen. There is in my opinion every reason to class these reactions with those described by Arthus, who noted that repeated injections of antigen in a partially immunized animal would occasionally produce an abscess.

It rarely happens that the needle punctures a small vein and the whole dose of the serum enters the circulation at once. If this patient has had a number of previous injections and if as much as a full tube has entered the vein there may be an immediate reaction of the following character: The patient has an intense pain in the back and experiences a sense of suffocation, the skin becomes flushed and itches intensely, and the patient is nauseated and may vomit; syncope may follow. Such a reaction, if it occurs, follows directly after the serum is injected. The patient should lie down at once, the clothing about the neck loosened, iced towels applied to head and if desired aromatic spirits of ammonia inhaled. It is quite unnecessary to do anything more, for before a hypodermic injection can be prepared the reaction has largely passed. The whole disturbance quickly subsides and the patient, aside from being somewhat frightened, is quite all right. Such a reaction is very unusual. I myself have had only two in the last three years, and I have given thousands of injections during this time. If the physician has never seen such a reaction and does not know that it may occur, he, as well as the patient, is likely to be frightened, a situation which causes much useless distress to all concerned.

The reactions which follow the injection of this serum are no serious bar to its use, provided the conditions outlined above are carefully followed. The reactions which have been described are not the usual results. They have been described at such length in order that the physician may know all the complications and be prepared to steer a safe course. It needs no lengthy description to picture the situation where no reaction takes place. Small doses should be given at first with careful observation of the effects and a gradual increase to the full dose. If repeated injections are given without permitting a sufficient interval between times for reactions to clear up, the arms will get into a very bad condition, the patient will have a continuously high temperature and be very uncomfortable. Moreover, the desired therapeutic effect will not be obtained.

So much has been said about the severe reactions that the impression may have been made that these are the rule. Such is not the case. The majority of patients show a very mild, or no reaction. They need no particular care in this respect, but unless the physician knows what may follow the injection, he is in no position to advise the patient.

The final word may be said about the reaction. Some patients cannot at any time take more than half a tube, 8 minims, and they do not need more to get excellent results. It is not a matter of variation of the activity of the serum but is purely a question of the individual's sensitiveness. The same serum given to one patient in doses of 1 c.c. causes no reaction of any moment, while to another it may be entirely too large to be borne with comfort. Experiments are under way at the present time to find a suitable method of eliminating these local reactions and permitting a slow absorption.

It must be understood that the serum treatment is only a part of the medical treatment, and all those medical measures which have been proved of value should be instituted. It may seem trite to voice such a precau-

tion, but my experience has shown me that many physicians regard the serum as a short cut to cure without the necessity of employing medical common sense. It is expected that a nervous, weak, sleepless, nauseated patient with a rapid, dilated, decompensated heart will make a prompt recovery after a few injections of serum and yet be allowed to conduct himself in the meanwhile as he pleases. No sane physician fails to treat a diphtheria patient as a sick person because the antitoxin has been administered. Patients with hyperthyroidism must be regarded as sick persons although they may not have such a degree of physical weakness as compels them to remain in bed. The patient, unless only mildly affected, must in the beginning of treatment have as complete rest as can be obtained. This rest means freedom from mental, emotional and physical exertion. Careful inquiry will often elicit some particular factor of work or worry which has been instrumental in causing the disease or keeping it active, and this must as far as possible be corrected. If the patient is seriously affected, complete rest in bed is necessary, and sympathetic, talkative friends rigidly excluded. The same rule often applies to members of the family from whose petty disputes and vexatious interferences the patient at times stands sorely in need of protection. Exophthalmic goiter patients are highly sensitive and often react with an explosion to trivial annoyances.

No feature of medical treatment which has proved of value need be omitted merely because serum is to be given. The time has passed in this treatment when all other means of medical alleviation may be withheld for the purpose of demonstrating the effectiveness of the serum in controlling the disease. There are a considerable number of patients who do not respond to other medical treatment, but no measure which makes for the welfare of the patient should be neglected.

ACTION OF THE SERUM

Before considering the treatment of the different types of hyperthyroid patients I wish to state briefly my ideas as to how the serum acts. It has been generally referred to as a specific cytotoxic or cytolytic serum for the reason that it is developed by the same method as the serum which had produced lytic effects in the normal organs. In my opinion the disease may be looked on as a toxemia. The tissues of the body are oversupplied with thyroid secretion, which acts as a toxic substance. Many substances are known which in small doses act as physiologic stimulants but which in larger doses are distinctly toxic. To correct hyperthyroidism we need to counteract the toxic effect of this secretion and reduce the activity of the gland to physiologic proportions without destroying it. The serum in the dose used for therapeutic purposes is not actively cytotoxic. In the experiments which served as the basis for the production of this serum, 15 c.c. of a cytolytic serum made against the kidney were administered to a dog weighing 12 kg. at one intravenous injection. Under such a dosage active cytolytic effects were observed. No comparable dose of thyroid antiserum has ever been given to a human patient. The dose of 1 c.c. to a patient weighing 50 kg. is less than one-fiftieth the amount given to the dog. Furthermore, it must be remembered that the antigen from which the serum is developed is very largely made up of the colloid of the gland, a cell product and not from the proteins of active cells. From a theoretical point of view, therefore, it is not unreasonable to suppose that the serum is largely antitoxic and not cytolytic. I believe that clinical evidence is convincing that it acts as an antitoxin and protects the general tissues of the body.

Rabbit Experiments.—Some years ago I made a series of experiments to test this point, the results of which have never been published. A number of rabbit thyroid glands were collected and the protein prepared from them as has been already described in the preparation of the human antiserum. With this antigen a small dog was immunized. Six rabbits from the same litter were then divided into two lots, one of which served as a control. Both lots of rabbits were treated by injecting them subcutaneously each day with protein from rabbit's thyroid glands. The doses were gradually increased until each rabbit received each day the protein from five pairs of normal rabbit thyroid glands. One lot of three rabbits was treated with the serum from the dog immunized with rabbit thyroid and the other lot with normal dog serum. The rabbits treated with the immune serum did not show the effects of the treatment to anything like the same degree as those given the normal serum. The latter animals lost weight and had constantly a temperature from 1 to 2 degrees higher than the protected animals.

In some of the very acute, toxic human cases the relief from the toxemia obtained by serum injection is so prompt and complete that one is strongly led to the conclusion that the action is that of an antitoxin. The conditions are such that I have not been able to obtain human glands which at one time were diseased and the cause of symptoms, and later have been restored to normal function by serum. Most persons who have been relieved of the trouble show a keen interest in keeping their glands. This twofold activity serves to explain the results which will be mentioned later. Probably if given in very large doses a distinct cytolytic effect might be shown. The purpose of the treatment, however, is to relieve the toxemia and not to cause an immediate destruction of the gland. The restoration of the gland to normal size and function is a process which often requires months to complete, and is accomplished by a mildly acting inhibition rather than by sledge-hammer blows.

APPLICATION OF THE SERUM TREATMENT TO DIFFERENT TYPES OF THE DISEASE

The primary step in treatment is the diagnosis. With the increasing interest in the subject during recent years the diagnosis is more often made, and the early development of the disease is not infrequently observed. But one of the greatest impediments to better treatment is the fact that patients so frequently wait until the condition is far advanced before seeking medical aid. And they are not entirely to be blamed for this. In the early stages the patient often appears to suffer from excessive good health. They are animated with many interests and activities; they may have no ache or pain, the appetite is excellent, often extraordinary, they sleep well, and except for breathlessness on exertion appear to themselves to be quite well. The physician does not usually have an opportunity to treat them at this stage and such a result is in part due to the fact that the diagnosis is frequently not made when it should be. As an example of this point my own experience of the last year will serve. Only a very small proportion of my patients apply for general medical treatment, and yet in one year I have

found twelve whose real difficulty was hyperthyroidism, which was promptly relieved by proper treatment. All had had medical advice from a number of physicians who had not discovered the difficulty. If in a comparatively small number twelve proved to have been wrongly diagnosed, I am sure that men who have a large general practice frequently fail to appreciate the nature of the disease. So much depends on the presence of exophthalmos that it is unfortunate that it has been described as one of the cardinal symptoms of the disease. No one factor in the medical treatment of the condition will be of more help in the treatment than an early diagnosis.

For the purposes of this article the different types of the disease will be classified under six heads:

1. The early mild cases in young women from 12 to 20 years of age.
2. The early typical cases in patients over 20 and under 40.
3. The well-advanced typical cases.
4. The acute toxic inoperable cases.
5. The severe advanced cases of long standing.
6. The atypical cases.

Group 1.—Young women in school and college, shop girls and debutantes not infrequently react to overwork and undue excitement by showing an enlargement of the thyroid gland which often develops quite rapidly to a point where it attracts attention. As a rule they do not show much if any exophthalmos but they are physically weak, the heart rate is above one hundred and very sensitive to physical exertion, tremor is well marked, and the skin is flushed and sensitive. They show all the evidences of a mild hyperthyroidism. (It is not my purpose here to enter into a complete description but merely to outline the condition so that it may be recognized.)

These patients may not need serum at any time. It is my practice not to give serum to them until they have been under treatment for two or three weeks. They must be put at rest, school, college and social activities stopped, and complete relaxation obtained. Attention must be given to the general medical conditions regarding sleep, diet, stomach and bowel conditions. It has been my experience that the syrup of ferrous iodid in 15 or 20 drop doses in ½ glass of water after meals is one of the best tonics that can be given to such patients. In some cases I give also the neutral hydrobromid of quinin in 3 or 5 grain doses twice a day. They will need to be under restraint for from six to ten weeks and should not resume full activity for from four to six months. Most of them show early improvement and they may not need anything further to effect a complete recovery. If the conditions do not begin to improve promptly or if it is delayed, the progress may be hastened by the use of serum. In these cases the beginning doses should not be larger than 5 minims and the injections need not be made oftener than three days. The dose is gradually increased, allowing the reaction to subside entirely before repetition of the dose. The length of treatment required varies with the case, but the limit given above covers the majority. After the condition is well controlled the injections should not be stopped abruptly, but the interval should gradually be increased until finally they may be made every ten or twelve days.

Group 2. —In this group the same symptoms may be shown and the condition may arise from the same causes, but there are many cases found here that have had a so-called simple goiter for years without symptoms, that under the pressure outlined above, with the additional factor of pregnancy, have become troublesome. It is probable that many of these patients have shown exacerbations of a milder form before but have not sought medical help. These patients are not, as a rule, so quick to recover as those in Group 1. The same general plan of treatment is to be followed. It is advisable to begin serum treatment at once with most of these patients and it will need to be given for a longer time than in Group 1, and the additional duties and distractions incident to their age make them somewhat harder to control.

Groupe 3.—The patients included in this group have had the disease in a well-marked form for a long enough time to have permitted its characteristic effects to be well marked. No uniform length of time is required to produce these changes. They may occur in cases of only a few months' standing or it may require several years. Recovery need not be expected in this group for several months and the patients should be frankly told that they cannot expect immediate recovery and that their habits of life for at least one year will need careful regulation. It is useless to put such patients to bed for two or three weeks, give them serum and tonic treatment during this time and then expect them to resume normal life and all its activities again. I have often had remarkable improvement during such a period, but unless the condition is considered a serious one by both the physician and patient, much disappointment is bound to result. The serum injections will need to be continued at two to three day intervals for four or five months, bearing in mind what has been said heretofore about the reaction. When the patient has gained weight and strength, is sleeping well, and has a pulse rate of from 90 to 100, the interval may be increased, but this increase must be gradual with the patient under careful observation and a return to the former interval if there is a failure to control the symptoms. Serum must be continued often for a year before it is safe to stop altogether. I have at present under my care three cases that belong in this group in which the patients have made an excellent recovery after fifteen months' treatment. Another patient with a history of the disease for three years has made a recovery after five months' treatment; but such a favorable outcome is not the rule. Again I wish to emphasize the necessity of using medical common sense in dealing with these patients. If the physician confines his services to the injection of serum it is certain that failure will be a common event.

It is hardly a feasible matter to discuss serum treatment as means of treatment by itself for the reason that one rarely uses serum as the only therapeutic measure. In the patients in this group certain general statements may be made respecting the use of other medicines. After the symptoms have been well controlled, it is often a decided advantage to give the patient a tonic. Neutral quinin hydrobromid is often helpful at this time. Iron, arsenic and strychnin are at times necessary. The administration of iodin in small doses may be of great value. After the toxemia of the disease has subsided iodin may be given in small doses. Not more than ½ grain of potassium iodid three times a day should be given as a beginning, but its administration should be continued over a long period of time. If the dose is increased it should not be a sudden increase to a large dosage. Even after the symptoms are well controlled the administra-

tion of iodin in doses which would not ordinarily cause any disturbance may be followed by a sharp exacerbation of the disease. It is quite erroneous to suppose, however, that iodin can never be given to a hyperthyroid patient with any benefit. Large doses should never be given, and even with small doses the patient should be under close observation until his sensitiveness to it has been determined. The use of thyroid extract with patients in this group is a matter which requires considerable experience before proper cases can be selected. If given during the early stages of the treatment it is quite likely to cause a marked exacerbation of the symptoms. Every year I see a number of patients who have been severely injured by the free administration of thyroid extract given to reduce the size of the goiter. Not infrequently a patient appears with severe symptoms of hyperthyroidism after a period of thyroid treatment to reduce weight. The commercial sale of thyroid for this purpose should be prohibited.

Group 4.—The patients in this group are severely affected by the disease. A considerable percentage of them die from the toxemia, and it requires the most exacting care to bring such a patient through to complete recovery. The development of the disease may be rapid from the start, but in the majority it will be found that a mild condition of hyperthyroidism has been present for some time, and for various reasons has developed into an acute toxic condition of grave prognosis within a few weeks. The disease in this form presents roughly two types; the *asthenic* type resembling to some degree the profound physical prostration of Addison's disease, and the *sthenic* type in which there is not such profound prostration and evident toxemia, but tremendous stimulation of the nervous system with symptoms that resemble in some degree those of chorea major. To present the characteristics of these two groups it seems best to describe a patient in each class.

CASE 1.—*Asthenic Type.*—The patient was a woman aged 27, married for three years. She had always been a thin, wiry woman weighing from 110 to 120 pounds, very quick in her movements and unusually keen mentally. There was a history of rather rapid gains and losses in weight within the limits mentioned above. She had had measles, whooping-cough and mumps as a child, but as an adult had never been sick with the exception of an occasional sore throat. Examination of her throat revealed the right tonsil somewhat enlarged with the left one absent except for a few tabs of lymphoid tissue. Four years before the present illness she had had a peritonsillar abscess on the left side. The throat had been full since her first menstruation, which occurred at the twelfth year. Goiter had not been observed until attention was called to it during her present illness. She had passed through a normal pregnancy and had given birth to a healthy child eight months previously. For a few weeks before her present attack she had noted that she tired more quickly than usual, was out of breath climbing stairs and at times had palpitation. Her sleep had not been good for a few weeks and she had frequently had severe headaches. She had always been constipated. For two weeks before her present illness began she noted that her bowels moved from one to three times a day without a cathartic. Present attack followed a week of unusual social activity. She returned from a function at which she had danced many times feeling very tired, and had gone at once to bed and to sleep. At 6 a. m. she awoke with a very uncomfortable feeling about her heart, she had a severe headache, was nauseated and vomited twice. From this point she grew steadily worse until I saw her two weeks later at which time her condition was that described below. There was no exophthalmos but the lids remained half closed. Both lobes and isthmus of the gland were moderately enlarged, hard and somewhat nodular.

The blood-pressure varied from 100 to 120. Pulse at the wrist was small, thin and rapid. Abdominal aorta, however, had a marked pulsation; the heart did not have the heaving impulse often seen in this condition, the apex beat was diffuse and best felt about 4 inches from midsternal line. The pulse-rate varied from 150 to 180. At the slower rate a distinct systolic murmur could be heard over the apex. There was a prominent pulsation in the veins of the neck, and a marked thrill over the gland. The skin was at times dry and at others moist on soles of feet and palms of hands. The patient was restless but moved with difficulty. Physically she was extremely weak and could scarcely articulate in answer to questions.

She had no appetite, and the tongue was dry and heavily furred except at the borders of the tip which were red with the papillae raised. She could retain practically no food, complained of nausea, abdominal tenderness and was altogether a very sick patient. The temperature by rectum varied between 99.5 and 101.5.

Mentally she was extremely depressed, at times almost like a melancholia, and could not properly orient herself with respect to time or her surroundings. She often had great difficulty in choosing the proper word to express herself and would then break down in a fit of weeping. Sleep was induced with the greatest difficulty. She did not respond well to the usual hypnotics and had been almost entirely sleepless for three days and nights at the time I first saw her.

Treatment.—It is in cases of this kind that serum treatment has shown its most striking results. The patient was evidently overwhelmed by the toxemia. A preliminary injection of 8 minims of serum was made at once. Six hours later a full tube, 16 minims, was given into the other arm. That night the patient slept quietly without hypnotics for a period of ten hours. There was only a very slight reaction at the point of the second injection and none at the first. Injections of a full tube of the serum were given twice on the second day of the treatment, and thereafter a full tube every day for a period of ten days. At this time a marked reaction developed at the point of injection so that an interval of four days elapsed before more serum was given. From that time the treatment was continued in practically the same manner as has been described for the previous group. The effects of the injections were at once apparent. The toxemia was controlled from the beginning; the patient began to eat on the fifth day with fairly normal appetite and digestion although it was necessary to use a mild cathartic for two months. After nine months' treatment the patient made a complete recovery. At the time treatment was begun the patient had emaciated to a skeleton. During the period of treatment she gained 58 pounds.

The case has been described in detail for the reason that there are few clinical descriptions of this type of the disease in the literature, and because it is an example of a toxic case in which full doses of the serum were needed to control the toxemia. It cannot be concluded, however, that every such patient will need treatment in the same manner. In another patient of the same character even more of the serum was given during the first few days of treatment. It has been my observation that such patients will often take these comparatively large doses of serum without any disturbing reaction in the beginning of the treatment. But it is not safe to conclude that they will not so react, or that even if they do not react in the beginning that they may not later.

CASE 2.—*Sthenic Type.*—A married woman aged 24, the mother of two children, aged 6 and 3 years, had always been a thin woman of a nervous temperament while her two sisters were of larger frame and weighed from 60 to 70 pounds more than the patient. Aside from the infections of childhood she had never had any serious illness, and had

always considered herself well, although a picture taken two years before showed a marked exophthalmos and evident goiter. During the previous summer she had lost weight, and noticed that although she had a voracious appetite and consumed large quantities of food, she did not gain weight, and became breathless on slight exertion. She had become very talkative and irritable in the last month, although her appetite continued good. During the last two weeks she had slept but little and did not respond to hypnotics. She had never had headaches, but during the last month had from eight to twelve bowel movements daily and for a week preceding treatment had been nauseated. A physician was called two days before I first saw her at which time she had first taken to bed because of a severe attack of paroxysmal tachycardia, accompanied by nausea and vomiting.

At the time of my first visit the patient was very thin but had not reached the degree of emaciation frequently seen in this disease. She was exceedingly restless, constantly rolling from side to side and moving her legs and arms almost continuously. At times her arms and hands were thrown violently about in aimless movements. The skin was flushed and sweating profusely; dermographia was shown by an intense reaction. She had a marked exophthalmos. The gland was much enlarged, smooth and elastic, the right lobe being larger than the left. She had a temperature of 101 by mouth. The pulse was rapid, varying from 160 to 200 and irregular, at times uncountable, soft and of low tension. The cardiac impulse was diffuse, feeble during the rapid systoles, heaving and forcible during the slow beats. A loud systolic murmur was heard over the apex and body of the heart. The abdominal aorta showed a violent pulsation. The blood-pressure was 110 mm. Mentally the patient was on the verge of mania, her thought directed to a great variety of subjects within a minute, at times laughing inordinately at nothing and shortly thereafter having a fit of weeping.

The tongue was dry and red, the papillae swollen and the throat dry, although the patient consumed large amounts of liquid.

The slightest excitement caused a great reaction in her pulse and mental condition. She had heard the question of operation mentioned the previous day and had not recovered from the shock it gave her.

Treatment.—A full tube of the serum was given, immediately followed by 1/8 grain of morphin and 1/200 grain of atropin by hypodermic injection. She quieted in a half hour and that night slept for six hours quietly. The temperature the following morning was 99 by mouth. The following three days she received a full tube of serum each day. The last injection caused a small local reaction so that a day's interval was allowed to elapse before the following injection. Because of the local reaction, serum from this time could be given only at forty-eight-hour intervals. The patient had only the one dose of morphin and no hypnotic during the remainder of the treatment. The temperature remained normal after the third day, the excessive restlessness gradually quieted, the nausea was relieved and three weeks after treatment began all evidence of the previous severe attack had disappeared. The patient was now a thin woman, with a pulse of from 110 to 120, an excellent appetite, sleep normal, the exophthalmos had diminished, and the mental condition was normal. The patient continued to make an uneventful recovery, the treatment being continued for a period of eight months; but in the latter part of that time injections were given at ten-day intervals.

It is in these very severe types of the disease that the antitoxic properties of the serum are best shown. The relief obtained in such patients is often quite as striking as that obtained in diphtheria from the administration of the antitoxin. After the severe toxemia is relieved it is generally necessary to continue the treatment for some time to produce final satisfactory results. In a few instances I have had patients in this group of acute development recover with the same promptness that they might from an acute infection of the same severity.

Group 5.—In this group are placed the patients who have had the disease in a chronic form for many years. They may have been damaged beyond the possibility of complete repair, and the whole organism is in a condition of disorganization. In some instances the digestive apparatus has suffered the most, in others the heart is most seriously injured. There is a tendency as the disease progresses to become less typical in its manifestations and to express itself more markedly in disturbances of some particular function. The patients must be studied individually with great care to be sure that they are still in a condition of hyperthyroidism. Patients in this group are not as favorable subjects for any form of treatment as those previously described. Treatment must be continued for a longer time and with greater watchfulness for complications. Serious mental breakdowns, diabetes and nephritis are occasionally found, intercurrent infections not infrequently prove most disastrous and the task of the physician is hard and tedious. Some patients in this class I have treated for two years with serum with an ultimately satisfactory result. Others have not been benefited so much and have likewise failed of improvement after operation. As a rule, however, serum will produce good effects if the gland is still in a condition of marked overactivity. If three months' serum treatment produces no decided benefit it is in most cases not worth while to continue. The benefit is in most cases subjective in the beginning; the patient feels better although no decided change may be seen in the pulse rate or the nervous phenomena. Gradually the nervous condition improves, the patient gains weight on the same diet, and gains strength and self control as the hyperthyroidism diminishes. It is not necessary to give additional specific directions for the use of the serum in this group.

Group 6.—*The Atypical Cases.*—The atypical cases are the most unsatisfactory to treat of all forms of thyroid disease. Patients in this group often show the most bizarrre combinations of hyperthyroidism and hypothyroidism, and have many indications that other ductless glands, pituitary and pancreas may be involved. Serum treatment has a very limited application in this group. If the hyperthyroid symptoms are decided, serum may be tried, and occasionally a brilliant result will follow. As yet we have no satisfactory laboratory method for determining the presence of an oversupply of thyroid secretion in the blood. Therefore, a careful analysis of the symptoms and all attendant features of the condition must be made. Extracts from other ductless glands such as thyroid, pituitary, adrenal and pancreas, are in suitable types indicated. This group of cases can be presented only by citing in detail a considerable number of case histories with the method of treatment followed; and such a procedure is beyond the province of this paper for the reason that serum treatment plays such a minor rôle.

SOME CONSIDERATIONS CONCERNING SERUM VERSUS SURGICAL TREATMENT

The surgeons prefer early cases and urge the physician not to wait until the disease is so far advanced that secondary changes of a serious nature have resulted before recommending the patient for operation. Undoubtedly the best results from operation are to be obtained by operation in the early stages of this

disorder, but the same holds true precisely of the proper medical treatment including serum treatment. If operation is to be performed in the early stage of all hyperthyroid cases, much needless surgery will result.

The surgeon employs the means with which he is most familiar to effect a cure; he is accustomed to a quick solution of the problem, and as a rule is unwilling to guide the invalid patient through a somewhat prolonged course of treatment. My experience in the treatment of this condition has led me to the conclusion that much needless operating for its relief is now the practice. Disregarding the dangers attendant on the operation, it is my belief that from the physiologic point of view it is better practice to enable the patient to recover and keep the gland than to remove it to effect the same end. And in saying this I do not disregard the large factor of safety in the gland, or the argument that only diseased, useless tissue is removed. When the whole gland is involved in the pathologic process, as it frequently is, it must be assumed that the portion remaining after operation is restored thereby to approximately a normal condition. It is possible in a large percentage of cases to restore the whole gland to equally good conditions by serum treatment and leave the patient with the factor of safety provided by nature. A large proportion of hyperthyroid patients are under 35 years of age, and the physiologic function of the gland decreases somewhat with age; besides, there is a well-recognized progress in the overactive gland toward a condition of hypo-activity. The question may be considered, therefore, whether the patient who has been operated on may not suffer at a later period of life from too little thyroid function. The operation has not been in vogue long enough to answer this question accurately, and the statistics of any one surgeon are likely to be incomplete because of an inability to trace the patient. It may be argued, of course, that the immediate condition demands relief regardless of any hypothetic difficulty in the future. But is it not wise to give the patient relief by a means which insures as far as possible safety in the future from lack of thyroid function? And it must recognized that relief from hypoactivity is not to be completely obtained by the simple administration of thyroid extract.

It is not my purpose in making these statements to visit a sweeping condemnation on the operative treatment. No one with any experience in the disease can question its place as a valuable therapeutic procedure, and I am quite willing to grant it the first place; but it is my opinion that operation should not be undertaken as a first resort without a careful consideration of all the factors. It has too often been decided merely on the consideration as to whether it is a surgical possibility to operate without losing the patient. Unless the indications are very clear, the patient should have the benefit of medical treatment, and in my practice this generally includes serum treatment before operation is undertaken.

The surgeon argues for an early opportunity to operate and not seldom speaks of the medical deaths which might have been avoided. The physician, on the other hand, often has his patients returned after operation without benefit. The surgeon may refuse to operate when conditions are unfavorable, but the physician cannot refuse his services merely because the patient is desperately ill. So that in considering the statistical results from the two methods of treatment some consideration must be given to the fact that surgical cases are to a considerable degree selected. Not infrequently the patient refuses operation or seeks medical aid at a time when operation is not to be considered. The physician cannot take the point of view occasionally voiced by the surgeon that other treatment than surgery is useless.

SERUM TREATMENT AS A PREPARATION FOR SURGICAL OPERATION

Many physicians and most surgeons feel that the surgical removal of a portion of the gland is the only safe method of treating this disease. These men are inclined to feel that the patient is not safe from a relapse unless the overactive gland is largely removed. There is no question that operation is a necessity with some cases and advisable in those patients who are unable or unwilling to be treated medically. In some cases surgery is determined on from the beginning and it is desired to put the patient in the best possible condition for operation. The administration of serum for this purpose accomplishes such an end effectively in most cases. It must be remembered that not all cases respond equally well, and the mode of treatment is not different than would be followed if no operation was to be done. The relief of the nervousness, quieting of the heart and the gain in strength prepare the patient most excellently for the ordeal of operation. Some care will at times be necessary not to carry the period of preparation too far, or it may result in such complete relief that operation will be refused. The danger of severe hyperthyroidism following the operation is lessened, and the period of convalescence hastened if the active symptoms have been controlled by serum. These statements are not hypothetic but are based on the experience obtained from operation in many cases. Not infrequently the serum has been used to control the symptoms of acute hyperthyroidism following operation. The surgeon has not expected the explosion to occur, but it would seem better practice to prepare the patient in advance by giving a supply of thyroid antitoxin than to control the toxemia after it has once begun.

SERUM TREATMENT AFTER OPERATION

It is by no means rare to see cases that have not been much improved by the ligation and excision operations commonly employed. The portion of gland remaining may or may not have grown, but the symptoms are nearly if not quite as troublesome as before. In some instances there has been a short period of partial relief immediately following the operation with a gradual relapse later. Further operation is not feasible and the patient seeks relief in medical treatment. These patients often respond quickly and it at times appears that the removal of a portion of the gland shortens the period of treatment necessary to control the remainder. There is a limit to the amount of serum which it is feasible to give to any patient at one time, and there appears to be a relation between the amount of serum given and the toxemia which it is to control. When there is only one-fourth of the gland remaining, the antitoxic and inhibitive action of the serum is quantitatively more effective than when it is required to combat the whole gland. I have not infrequently seen serious relapses in such patients completely controlled in six weeks. On the other hand, patients who have been operated on are often in desperate conditions on account of complications of the heart, kidney and digestive tract. Such patients

need to go to the hospital for a general overhauling in addition to serum administration. And it may be discovered that serum treatment is not indicated. In maintaining a brief for the medical treatment I do not wish to have it appear that surgery has no place in treatment, but I wish to emphasize most emphatically the fact that many patients who have been operated on are by no means cured and that they often require prolonged and careful medical treatment to restore them to health.

RESULTS OF SERUM TREATMENT

The serum has been used in the treatment of more than 3,000 patients having hyperthyroidism of different degrees. From the classification given earlier it will be seen that these patients cover the very severe cases as well as the mild, early cases. The precise result which will be obtained with any given patient cannot be precisely foretold. Such a situation confronts the physician, however, in every field of therapeutics. Experience with the serum and with the disease is an important factor in the treatment. Physicians are occasionally unwilling to take the time to learn the necessary precautions and nearly always come to grief. I recently saw a patient whose physician had ignored the careful directions given him and persisted in giving a full tube of the serum every day for a week in beginning the treatment in spite of the fact that each injection caused a reaction of increasing severity, and no time was allowed for these to subside before repeating the dose. Such carelessness is most culpable. The patient was in a very uncomfortable condition with a continuous temperature of from 101.5 to 102, sleepless, nauseated and with a general cutaneous erythema. Each point of injection was represented by large, red, indurated, intensely painful areas. Two of these pointed and discharged a quantity of thin, sanious fluid containing numerous mononuclear cells, but cultures gave negative results. It required two weeks of careful attention before the patient recovered from the effects of this malpractice. This instance is cited because I wish to emphasize the fact that the results of treatment depend in large part on the care and intelligence with which it is directed.

The results of the treatment may be classified as follows:

Fifty per cent. of the patients have been cured in the sense that they are strong and able to meet all the demands made on them. They are of normal weight, have a normal heart, have no tremor, are not nervous, have no gastro-intestinal disturbance and perform all their accustomed tasks without undue fatigue. In some instances the goiter, although much reduced in size is still enlarged, and in others exophthalmos persists to noticeable degree. Some years ago one of the best-known surgeons who operate for this disease stated that in his experience no patient who had the disease in a well-marked form ever made a complete recovery by any treatment. And he defined complete recovery by stating that he meant that no symptoms of the disease should be evident. This conservative statement may be contrasted with that of other men who claim from 85 to 90 per cent. complete recoveries. I am able to state, however, that a large portion of the 50 per cent. included in the list of cured as first defined show no evidences of the disease, and are normal persons. They pass rigid physical examinations and would never be suspected of having had the disease at any time. None of the cardinal or secondary symptoms can be discovered.

Thirty per cent. of the patients treated show a very marked improvement, to such a degree that they meet all the usual demands of life without undue reaction. Under unusual physical or emotional strain they react more than normal persons do. The two symptoms which are most evident with them are a gland larger than normal, and in many cases a mild exophthalmos. Some of this group ultimately improve to a point permitting them to be called well.

The remaining 20 per cent. includes those who have not been so markedly benefited, those who have been operated on, those who have not been benefited and those in whom the disease has proved fatal. The percentage of fatal cases in patients who have had serum treatment for a period of six months is very small.

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ENDAMEBIC PYORRHEA AND ITS COMPLICATIONS

A PRELIMINARY NOTE *

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The study of the relation of pyorrhea and oral foci of infection to systemic disorders of a probable toxic origin received a marked stimulus from the recent discovery of the causative relation of endamebae by Smith and Barrett,[1] 1914. In their study, the presence of the *Endamoeba gengivalis* Gros,[2] 1849, was constant in forty-six cases of pyorrhea. The independent works of Chiavero[3] and Bass and Johns[4] corroborate the constancy of this finding in gingival infections.

Prior to this investigation, the extensive clinical and experimental research in the subject of oral sepsis had shed considerable light on its relation as a distant focus for systemic toxemias. Hunter[5] had long advanced the theory of an oral septic origin for numerous systemic disturbances, more notably, pernicious anemia. More recently, Billings, Rosenow and others had emphasized the importance of oral sepsis as a factor in remote general conditions. The efficacy of autogenous bacterial vaccines had been tested, and the variability of results both locally and generally had opened the question of a possible complexity of causative factors.

The application of the specific drug for the treatment of amebic dysentery, ipecacuanha or its active principle, emetin (alkaloid), to the treatment of an analogous condition in the mouth, was the next rapid step in our knowledge of pyorrhea. Two modes of procedure have been followed. The first, that of Smith and Barrett, was the local injection or application to the affected gums of a weak emetin hydrochlorid solution. At first a 1 per cent. solution of the hydro-

* From the Department of Clinical Medicine, University of Wisconsin.

1. Barrett: Dental Cosmos, August, 1914; ibid., December, 1914.
2. The term "Endamoeba gengivalis" Gros, 1849, is substituted for "Endamoeba buccalis," Prowazek, 1904, at the suggestion of Dr. Allen J. Smith, whose studies of the original articles prove beyond a doubt the priority and accuracy of Gros' description and observations.
3. Chiavero, Angelo: Abstr., Dental Cosmos, September, 1914.
4. Bass and Johns: New Orleans Med. and Surg. Jour., 1914, lxvii, 456.
5. Hunter: Brit. Med. Jour., Nov. 19, 1904.

chlorid proved irritant in some cases, so that a strength of 0.5 per cent. has since been administered. The customary routine has been daily injections of a small portion, often only a fraction of a drop of this solution, into each pocket. Smith and Barrett,[6] in their preliminary report, noted the marked improvement to complete cure of thirteen cases of Rigg's disease so treated. Since that time many cases of correspondingly good results have been added to their list. Several ingenious devices have been evolved to meet the demands in certain cases referred by us to dentists. The use of air pressure to separate the gum from the tooth has been of assistance in some instances (Dr. S. H. Chase). The use of blunt-pointed needles (Dr. Kent Wood) and the replacement of the hypodermic needle by a dental file (Dr. E. J. Hart), the hanging drop of emetin solution adapting itself by capillarity to the smallest pockets where no needle could be introduced, have both been valuable refinements. The application of a heavy petrolatum to the gum margin after each treatment appears of value. Barrett, in a more recent article,[7] has carefully covered the ground of the surgical dental care, which must supplement any specific treatment.

The more recent announcement of Bass and Johns of their discovery of endamebae in eighty-five out of eighty-seven cases of Riggs' disease, and of its rapid subsidence after the subcutaneous administration of emetin hydrochlorid, constitutes the proof of the efficiency of a second method of treatment or of administration of the specific drug. Smith, Middleton, and Barrett,[8] in a recent study of tonsillar endamebae and their relation to systemic disturbances, noted in several cases the disappearance of endamebae from the cryptic contents on the subcutaneous administration of emetin hydrochlorid.

The present study constitutes a brief preliminary report of a series of cases under observation in the University of Wisconsin Medical Clinic. In all, seventy-two oral cases have been examined by the usual method, heated stage, warm slide and cover slip, the material scraped from the depth of the pocket being immediately mixed with warm normal saline and mounted. Seventy cases showed endamebae ranging in size from 8 to 32 microns in diameter, filled with granular material but no contractile vacuoles; the pseudopodia varied widely in size, length and activity; the ectoplasm was decidedly hyaline, and only after an interval was there an outpouring of the granular endoplasm into the newly formed hyalin pseudopod. These amebae fall under the heading of *Endamoeba gengivalis* Gros. The type *Endamoeba kartulisi* Döflein, 1901, was associated with the *Endamoeba gengivalis* in two cases. According to the literature, the differentiation of these two types is to a great degree based on the difference in the size and activity of the pseudopods, those of the *kartulisi* being much broader and more active. Of these two points there could be no doubt in the cases noted; but an added differential point was observed, namely, the refractive quality of the substance of the pseudopods of the *kartulisi* was much more marked than that of the common forms. Indeed, the difference was almost that of hyaline and waxy renal urinary casts. An unclassified ameba was noted in two cases of pernicious anemia along with the type gengivalis. This ameba possessed a definite endoplasm and ectoplasm, was from 10 to 30 microns in diameter, its pseudopodia were rapidly thrown out, frequently subdividing, but never was there noted an outflow of the very highly refractile granular endoplasm into the pseudopodia. The two negative cases showed considerable gum retraction with dentine erosion.

A point to which our observation has led us to attach considerable importance is that of the mechanical interference by metallic filling and crown or plate attachments with the normal adaptation between the crusta petrosa or cement and the gum or pericementum (ligamentum circulare dentis of Kölliker). Invariably such cases have shown pyorrhea in these localities. Whether this is a constant finding and whether the presence of an irritating foreign body determines the condition, we cannot judge at this time.

Of the seventy pyorrhea cases with amebae present, fifty-four were treated by the local injection of 0.5 per cent. emetin hydrochlorid solution. The results were practically uniform in the marked improvement of the pyorrhea. The period of treatment varied from four to twelve days, with an average of about seven. In a few instances the patients complained of "tender" gums, but the great majority remarked early in the course of their treatment on the new experience of an ability to brush their teeth without the pain or the bleeding noted prior to the treatment.

After an interval of from several days to a week following the last treatment, which corresponds to an apparent local cure, a reexamination for amebae was made. Even though the second examination was negative, as a precautionary measure, a subcutaneous course of emetin was instituted. Two plans of dosage were followed: a series of small doses, daily ⅛ grain doses of the hydrochlorid for eight days, or a shorter series of larger doses, ½ grain repeated with a day intervening followed by ¼ grain on two successive days. The reason for this supplementary treatment has been to insure the death of any endamebae penetrating the deeper tissues of the gums, and therefore possibly unscathed by the local injections. Another rational procedure would be periodic subcutaneous injections, say at monthly intervals over several months, to prevent the multiplication of encysted amebae which resist the biochemical amebicidal action of ipecac.

Only five cases have been treated with subcutaneous injections alone. The results in these have been entirely satisfactory, but with ambulatory cases we have not felt justified in using the rather large doses suggested by Bass and Johns. To us, this very fact constitutes a real drawback to the use of the remedy subcutaneously alone.

The constitutional manifestations associated with endamebic interstitial gingivitis are the disturbances attributable to a toxemia of any other origin. Fifty-two, or 74 per cent. of the seventy pyorrhea cases showing endamebae, displayed constitutional symptoms or disturbances of more or less marked degree. We have endeavored to group the constitutional derangements in these cases attributable to a toxic factor under several heads: (*a*) arthritic, (*b*) neuritic, (*c*) digestive, (*d*) hemic, and (*e*) miscellaneous.

Under these headings twenty-six individuals, 50 per cent. of the persons exhibiting constitutional symptoms, or 27 per cent. of the total endamebic pyorrhea cases, showed arthritic symptoms of varying degrees, most frequently, however, of the type denoted as arthritis deformans. Six persons, 11 per cent. of the

6. Barrett: Dental Cosmos, August, 1914.
7. Barrett: Dental Cosmos, December, 1914.
8. Smith, A. J.; Middleton, W. S., and Barrett, M. T.: The Tonsils as a Habitat of Oral Endamebas, THE JOURNAL A. M. A., Nov. 14, 1914, p. 1746.

total constitutionally affected, consulted us for neuritic involvement, and a similar percentage showed hemic changes. Two patients suffered from obscure digestive disturbances. The remaining thirteen individuals fall into a miscellaneous group, whose components cover a wide range. Certain of these will be discussed individually. In such a broad general classification we have been forced to pick out the most prominent symptom of a toxic complex, and we have therefore sacrificed the complete picture for the purpose of presenting its most evident detail.

The application of a specific drug for the relief of a supposedly specific infection is an acknowledged therapeutic principle. The further application of this principle to the relief of remote conditions complicating the original specific lesion is justified. However, in this instance we are not compelled to assume an amebic character for the remote disturbance arising from the primary gingival focus. The mere relief of a focus of toxic absorption frequently explains the subsequent alleviation of a toxic derangement.

Seventeen of our twenty-six arthritic patients have received local treatment with marked improvement or the absolute relief of the interstitial gingivitis in all cases. Of these patients, ten have experienced decided improvement subjectively in their joint symptoms; three have had but slight relief from their arthritic pain, and the remaining four have shown no definite change. Two arthritic patients not treated locally, together with thirteen from the foregoing group undergoing local treatment (nine of these were improved and four unimproved under the local care), have been treated by the subcutaneous administration of emetin hydrochlorid. Of the four patients unimproved by local treatment of the gingival condition, none has shown maintained improvement even under the combined treatment. Two of these to the roentgenogram show well-marked osteo-arthritis. A third is undoubtedly a case of traumatic bursitis, in which the arthritis is a secondary factor, and the fourth is a very extreme long-standing case of arthritis deformans. In all, nineteen cases of arthritis have received the various forms of treatment with no apparent improvement in four cases, with indifferent results in three, but with decided unmistakable improvement in twelve cases, 63 per cent. of those treated, two of these being treated by the subcutaneous method alone.

The group of neuritis cases has been disappointing because of our inability to follow the subsequent course of five of the six persons referred to dentists for local care. The only patient returning for the supplementary subcutaneous treatment has shown no change in the neuritic condition.

Of the two cases with digestive derangement as the prominent symptom complex, both were improved by local treatment, further improvement being noted in one following the administration of emetin hydrochlorid subcutaneously. In both cases malnutrition was the most important factor, though neuroses usually attributable to general toxic disturbances were manifest. We believe that the improvement in these cases was due partly to the removal of a toxic focus, thereby correcting a metabolic disturbance, and partly to the betterment of the local condition in the mouth, which was followed by improved mastication and increased appetite.

The six cases with hemic disturbances included two cases of pernicious anemia, and four simple secondary anemias of rather moderate grade. We have been unfortunate in our inability to follow the pernicious anemias. One of them was started on emetin subcutaneously, but a return of a previously existing gastrointestinal disturbance made its continuance inadvisable. A gain of up to 500,000 in the total red corpuscle count was noted in several of the secondary anemias on the removal of the gingival toxic focus by the emetin treatment. Similar changes in the blood picture of several cases grouped elsewhere have been noted after the subsidence of the pyorrhea.

We freely admit a question of doubt as to the etiologic relation in the group of miscellaneous conditions associated with pyorrhea. However, the relief of certain remote symptoms and conditions, which undoubtedly had a toxic focus as a basis, under the emetin treatment has led us to include the whole number. For instance, a case of obstinate uncontrollable headaches, whose source could not be discovered, responded quickly on the relief of a pyorrhea. A still more obscure case of marked splenic enlargement or tumor without a blood picture characteristic of any pathologic lesion was observed for two months without a diagnosis and without any change in size. There was, however, a most extreme pyorrhea. The local improvement in this condition under the local use of emetin hydrochlorid was attended by a reduction of the splenic tumor of 1½ inches in both the longitudinal and transverse diameters; a total reduction of over 2 inches in both diameters has followed the combined local and subcutaneous administration of the same drug. Other associated conditions noted in this miscellaneous group include accessory nasal sinusitis, endocarditis, continued unexplained leukocytosis, and the toxic cases falling under a broad, general heading of lowered nutrition and lowered general vitality. Among this type of cases only continued treatment and observation can possibly note a change of condition. Additional cases of the nature of visceral parenchymatous degenerations, as occur in the myocardium, liver and kidneys in any toxemia, will possibly be noted in the pursuance of this study.

The question of local reaction on the subcutaneous injection of emetin hydrochlorid in our cases has been most interesting. For instance, a case of arthritis whose pyorrhea has been cleared up by local treatment will show no reaction at the points of subcutaneous injection of two successive half-grain doses of emetin. On the third or fourth dose of only ¼ grain, a most marked local reaction in the form of a wide, indurated areola of inflammation about the point of injection occurs. This local reaction may be attended by a temporary exacerbation of the general symptoms, usually followed by a marked improvement. We have been led to think of this reaction as an index of a point of saturation, when, with the death of numerous amebae the strength of emetin in the blood having reached a lethal point, a great amount of bacterial and possibly amebic toxin is liberated. Of course, this explanation is tentative, and subsequent observations may rule it out, but the alleviation of the general symptoms succeeding such an occurrence strongly supports this view.

As to the manner of the production of the toxic reaction in structures remote from the gingival focus, the several explanations advanced by Smith, Middleton and Barrett[8] might be quoted:

> Much must depend on the local circumstances governing absorption, and much, too, must depend on the number and type of associated bacteria. Whatever other relation may obtain between the amebas and the accompanying vegetable

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micro-organisms, one may be certain that the amebas feed largely on the latter; and in this bacterial phagocytic action they doubtless set free from this and from that organism different endotoxins. Doubtless bacterial toxins thus originating play a more important part than do toxins from the amebas themselves, if there be amebic toxins.

In regard to the exact method of action of either toxin, we may assume the selective action of the specific toxins to determine the system or the structure involved. In this connection, the old theory of the metabolic origin of many of the complications mentioned above may present itself in a new light. The liver is to a great degree responsible for the disposal, breaking up or removal of toxins arising within the body. It is, therefore, barely possible that certain of the systemic disorders may arise from a disturbance of the normal metabolic function of the liver. As to the hemic complications, the degrees of secondary anemia noted might readily arise from a bacterial hemolytic toxin, but our observations on the active lysis of engulfed red corpuscles in numerous instances lead us to the belief that the endamebae either through an intracellular or extracellular hemolytic toxin, or both, may be even a more important factor.

In conclusion, we would impress the facts that constitutional disturbances are very frequent complications of endamebic pyorrhea, that arthritis, particularly of the type arthritis deformans, is the most frequent complicating disorder, and that the results from the local and general administration of emetin hydrochlorid in the relief of the pyorrhea and the marked improvement of the arthritic condition are very encouraging in a large percentage of cases. In addition, unexpected relations between pyorrhea and certain remote conditions are established through the response to the emetin treatment.

We are indebted to the clinical staff of the University of Wisconsin, to the dentists of Madison and to Dr. Allen J. Smith of the University of Pennsylvania for assistance in the treatment of this series of cases and for timely suggestions during this period of preliminary observation.

SODIUM CITRATE IN THE TRANSFUSION OF BLOOD *

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Blood mixed in proper proportions with a solution of sodium citrate does not clot, owing to the well-known fact that the calcium salts are no longer available for coagulation. Such blood may be kept for many days in the ice-box, without losing its oxygenating function. After one week the cells show little change under the microscope, and very slight reduction in the resistance to toxic physical or biologic agencies. After a few days there is merely some tinging of the supernatant fluid. Experimentally, I have found that guinea-pigs or dogs may be practically exsanguinated, and can then be rapidly restored by venous transfusion of citrated blood, even if the blood is several days old. No unpleasant reactions occur. Human patients have been treated in the same way, receiving in various cases amounts ranging from 10 to 350 c.c. of citrated blood. The blood was used fresh in some instances; and in others, it was from three to five days old. Such injections are perfectly well borne and produce no apparent disturbance of any kind except a transient rise of temperature and polyuria.

The method is simple. Blood is aspirated from a vein and is at once well mixed with sodium citrate in 10 per cent. solution in water, in the proportion of 1 c.c. of solution to 10 c.c. of blood. Exceptionally one encounters blood which requires slightly more or less citrate proportionately. Preliminary tests, 0.1 c.c. of the solution to 0.5 c.c., 1 c.c. and 2 c.c. of blood, respectively, being used, enable one to determine rapidly the requisite proportions in any individual instance. If the mixture is made in the syringe, in cases in which not more than 50 c.c. are to be transfused, the transfer can be made directly from donor to donee. If larger amounts are to be used, the blood is expelled into a flask, from which the injecting syringes are filled. In drawing the blood, it is convenient to use a three-way stop-cock which communicates with the needle, with a 10 c.c. syringe containing the citrate, and with a large aspirating syringe.

The same method has been used for direct transfusion in dogs. The needles are introduced into the veins of donor and donee, and are both connected by a T-shaped tube with a syringe. An accessory syringe permits of the injection of the citrate solution into the tubing between the syringe and the donor's needle. The blood is alternately aspirated and expelled, the direction of the current being controlled by two stop-cocks. The apparatus is very simple, and requires the help of only one assistant.

A possible objection is based on the influence of the sodium citrate on the coagulation time of the donee. This has been tested for me in a series of cases by Dr. Beck of the General Memorial Hospital. The figures indicate that the introduction of large amounts of 20 per cent. sodium citrate solution do not lower the coagulation time in the least. In fact 5 gm. of sodium citrate reduces the coagulation time by one-half. The tests have been made on blood aspirated from the vein immediately before, and ten minutes after the injection. It gradually returns to normal.

The uses of this method require little discussion. For the frequent injection of small amounts of blood, it offers obvious advantages. For the direct transfer of large amounts, it may be compared with the method introduced by Satterlee and Hooker. It has, however, the obvious advantage that sodium citrate is always easily obtainable, which is not the case with hirudin. The fact that the blood can be kept on hand for some days may be of value in cases of threatened hemorrhage, as in gastric ulcer, or typhoid. Indeed, its effect on coagulation time indicates its use in hemorrhagic conditions. Essentially, the method is similar to the old method which relied on the use of defibrinated blood. It is, however, simpler than this, and avoids the effects attributed to the presence of fibrin ferment in the defibrinated blood. The possible disadvantages connected with its use can be determined only by prolonged observation.

In selecting the blood to be transfused, it has been customary to mix the serum and the cells of donor and donee in varying proportions, in order to avoid the dangers resulting from agglutination or hemolytic effects. I have found it quite satisfactory to use the following method for the purpose: The citrated bloods of the two individuals are mixed in narrow tubes as follows, three tests being made: One c.c. of each; 0.1 c.c. of one, to 0.9 c.c. of the other, and vice

* From the General Memorial Hospital.

versa. After incubation for one hour, agglutination may easily be determined. Hemolysis is disclosed by the color of the upper layer, if the cells have settled sufficiently; if not centrifugation is required. This method is much less elaborate than that at present in use, but has the advantage that it preserves the natural conditions.

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REPAIR OF DEFECTS IN BLOOD VESSELS BY FREE GRAFTS OF FATTY TISSUE *

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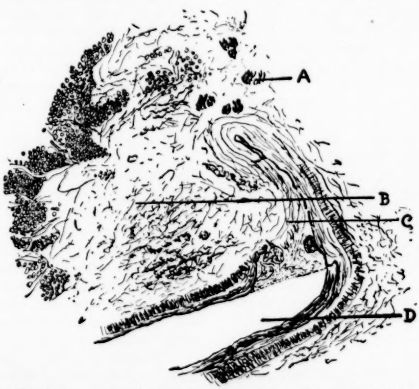
Feb. 7, 1914, while removing the glands during an operation for cancer of the penis, part of the femoral vein to which they were firmly attached had to be cut away. The patient was 78 years of age, the veins thick and sclerotic; proper material for venous suture was not at hand. Hemorrhage was temporarily stopped by pressure. A bit of fatty tissue removed from the wound in the groin was tacked over the opening in the vein by a fine silk stitch which did not pierce the vein itself, but passed through the adjacent tissue and was crossed over the graft. On releasing the pressure there was no further bleeding. The patient died twelve days afterward in a senile delirium. Necropsy showed the lumen of the vein to be free of clot and its walls smooth. The graft was firmly adherent and not necrotic in spite of the fact that the wound was suppurating and the graft surrounded by pus. Microscopic sections showed a good cell stain in the transplant, although there was much leukocytic infiltration; the lumen of the vein was free, the intima not degenerated. The site of the graft is readily seen in the drawing by the break in continuity of the elastic fibers of the vein, which have not bridged the defect.



Illustrating repair of breach in vein wall by autotransplant of fat. *A*, silk sutures; *B*, graft; *C*, defect in wall of vein filled out by graft; *D*, lumen of vein. Magnification × 10. Weigert's elastica stain.

Carrel and Guthrie[1] in their well-known experiments succeeded in patching arterial defects with various substances, using peritoneum and even rubber. Jiano[2] repeated these experiments and applied them clinically in a case of femoral hernia where the femoral vein had been accidentally wounded. A defect was caused 1 cm. wide that took in half the circumference of the vein. This was patched with a pedicled flap from the hernial sac and covered for better security with a layer of the surrounding loose connective tissue.

Hilse,[3] Binnie[4] and others have called attention to the efficacy of a free graft of fat or a pedicled omental flap in the arrest of hemorrhage from parenchymatous organs. Hilse noted that it was often unnecessary to stitch the graft to the wound surface, and that simple pressure continued for a few minutes would suffice to secure a fibrinous attachment firm enough to assure permanent hemostasis.

Kirschner[5] and later Chiasserini[6] experimented with a cuff of fascia interposed as a segment between the ends of a circularly resected artery; thrombosis, however, occurred at the suture-line. Davis[7] wrapped strips of fascia around blood-vessels to reinforce a suture and Halsted[8] suggests their use in aneurysms. Both Kirschner and Davis used pieces of fascia in suturing parenchymatous organs and call attention to the prompt hemostasis. Hohmeier[9] and König[10] used free grafts of fascia to repair defects in hollow viscera—trachea, esophagus, intestine, bladder, etc.

Conditions may occasionally arise in which closure of a rent in a vessel by suture is impracticable, whether because of sclerosis, inaccessibility, lack of a proper instrumentarium or because of the time required for this delicate work. In these cases repair by means of a small free graft of fat or fascia offers a simple substitute. For the repair of small defects in veins the graft of fat or fascia has the advantage that no suture of the vessel itself is needed, a few simple retaining stitches which hold the graft in place without piercing the vessel wall being sufficient. The procedure is consequently more simple than repair by suture, needs no specially delicate instrumentarium, and is easier, quicker and safer, there being no threads in the lumen of the vessel on which clots may form.

CONCLUSION

Free grafts of fat or fascia sewn over defects in the walls of veins offer a simple and safe substitute for the repair of these defects by suture.

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* From the Division of Surgery, Medical Department, Stanford University.

* Read at the meeting of the San Francisco County Medical Society, May 19, 1914.

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10. König: Neue Wege der Plastik (Verlöthung und Ueberbrückung), Arch. f. klin. Chir., 1911, xcv, 326.

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THE NEED FOR DETAILED SPUTUM REPORTS

SUPPLEMENTARY REPORT

ARTHUR T. LAIRD, M.D.

NOPEMING, MINN.

The bare statement in a laboratory report that the sputum does not contain tubercle bacilli gives the physician comparatively little help in arriving at a diagnosis, and may be absolutely misleading. It is important that he should have in addition some idea of the character of the sputum submitted by the patient. A dozen negative reports from mouth and throat specimens would be of less value to him than one report on a specimen that came from the lungs. The designation of the sputum as "mucoid" or "purulent" would be a helpful addition to the ordinary report, but a somewhat more detailed description of the macroscopic and microscopic characteristics of the specimen would be of still greater value.

In a previous communication,[1] a method of making reports was suggested, by the use of which, it was declared, the physician would be informed with some degree of certainty whether the specimen was derived from the upper air passages or was really from the lungs; in other words, he could tell whether the specimen was a "mouth" specimen or a "bronchial" specimen.

Under "macroscopic appearance" the specimen is described as watery, mucoid, mucopurulent, purulomucoid, purulent or bloody. If one of the other varieties is simply blood-streaked, the fact is noted; but the specimen is not called bloody unless it consists of pure blood.

In the microscopic examination, the presence or absence of tubercle bacilli is noted. Their number is estimated according to the Gaffky schema, and their arrangement is recorded if desired.

Under the heading "cells," particular attention is given to squamous epithelial cells and to pus cells (polynuclears). If the former are present in large numbers so that they are prominent elements in the picture, they are given precedence in the statement of cells present. On the other hand, if the pus cells are numerous they are recorded first. The presence of small round cells, alveolar cells, and, in appropriately stained specimens, of eosinophils, may also be mentioned. Mononuclear cells rarely form the majority of the elements present.

In regard to secondary organisms, a note is first made stating whether they are few or many. More details as to the varieties present may then be added.

A table of 541 examinations showed that there was a natural grouping of the specimens into four main classes. Since the publication of the article referred to, the number of cases in which the method has been applied, at the Adirondack Cottage Sanatorium and at Nopeming Sanatorium, has increased to 2,509, as shown in the accompanying table. (The summaries were made by Dr. George D. Heist and Samuel Marcus.)

The examinations were made by seven or eight different men, yet the results are substantially the same as in the first report. A mucopurulent sputum, containing many pus cells and few secondary organisms, is in most cases a "bronchial" specimen, and if it does not contain tubercle bacilli, the doctor may be satisfied that the test was a fair one. If the specimen has been coughed up from the lungs, it is not usually much contaminated by mouth or throat secretions. On the other hand, a specimen may to the naked eye be almost equally purulent; but if under the microscope it contains many squamous epithelial cells and numerous secondary organisms, it is more likely to be derived from the throat or nose ("throat" specimen). In catarrhal conditions of the nose and throat such specimens, thick and yellow in appearance, are frequently obtained. Watery and mucoid specimens, like the droplets emitted in ordinary coughing, in which sputum is not raised from the lungs, do not usually contain tubercle bacilli, and the acceptance of reports on such specimens as a basis for excluding a diagnosis of tuberculosis is an injustice to the patient.

TABLE SHOWING CHARACTER OF SPECIMENS OF SPUTUM IN A SERIES OF TWENTY-FIVE HUNDRED AND NINE CASES*

Type	Macroscopic Appearance	Cells Predominating	Secondary Organisms	T. B. +	T. B. —	Total	Per Cent. +	Per Cent. —
1	Watery or mucoid	Squamous epithelial cells	Many	19	388	407	4.7	95.3
2	Purulomucoid	Squamous epithelial cells	Many	48	421	469	10.2	89.8
3	Purulomucoid	Pus cells.....	Few	215	290	505	42.6	57.4
4	Mucopurulent	Pus cells.....	Few	452	223	675	68.4	31.6
5	.....	Other combinations	.....	130	323	453	28.7	71.3
	Totals.....	.....	.....	864	1,645	2,509	34.4	65.6

* The headings "T. B. +," "T. B. —," "Per cent. +," Per cent. —" indicate, respectively, the presence and absence of tubercle bacilli. Types 1 and 2 are "mouth" or "throat" types; types 3 and 4, "bronchial" types.

1. Laird, Arthur T.: A Method for Increasing the Diagnostic Value of Sputum Reports, THE JOURNAL A. M. A., Jan. 23, 1909, p. 294.

STRANGULATED EPIGASTRIC HERNIA

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A man, aged 80, for a number of years had had a mass in the median line above the umbilicus. This mass, which evidently was an epigastric hernia, had suddenly shown evidences of strangulation, and it was in consequence of this that he was seen. The strangulation presumably had followed a bronchitis which had occasioned severe coughing. Operation was performed at once. The hernia was found to escape through an opening in the linea alba about 3 inches above the umbilicus. There was a distinct peritoneal sac, which, on being opened, disclosed a mass of omentum about the size of a small orange. This was ligated off and the hernial opening closed. The patient made a good recovery so far as the wound was concerned, although the bronchitis was considerably aggravated by the anesthetic, and in consequence of this he was quite ill for a number of days.

Epigastric hernia is, in comparison with the total number of hernias, infrequent, and strangulation of an epigastric hernia is particularly so. The percentage of the occurrence of epigastric hernia has been variously given as from 1 to 5 per cent. of all hernias.

Bull and Coley,[1] in a report of 1,500 cases of hernia, give only two cases of this type, and a later report by the same observers of 2,032 operations for hernia notes only six cases of epigastric hernia. John Phillips[2] reported only forty-two out of 7,500, a percentage of 0.56. Quain,[3] on the other hand, gives the percentage of 5 per cent.

Quain divides epigastric hernia anatomically into two classes: First, simple fat tumors or properitoneal lipomas, which protrude through a cleft in the linea alba and do not possess a proper peritoneal sac; and second, true hernias with a sac of peritoneum, in which sac hernial contents may or may not be found.

The invariable appearance of these hernias above the umbilicus and never below it is due to the anatomic relations of the recti muscles, which, below the umbilicus, come closely together, while above that point an appreciable interval exists between their sheaths, which is occupied by areolar tissue. The production of hernia of this type is therefore much easier in the upper abdomen than in the lower.

Strangulation in this type of hernia is rare. Hotchkiss,[4] writing in 1911 and reporting a case of strangulated epigastric hernia, was able to find but two previously reported cases. A search of the literature, however, shows a considerably greater number. Moschcowitz[5] of New York reports a case of strangulated epigastric hernia, and after carefully considering all the reported cases of strangulation comes to the conclusion that only ten of them can be regarded as true cases of epigastric hernia. He believes that most of the reported cases of this type of hernia are not true hernias at all, but merely cases of prolapse of the fat contained between the layers of the falciform ligament of the liver.

As the case I describe escaped through an opening in the linea alba and possessed a true peritoneal sac, and as the contents of the sac was composed of omentum and not merely properitoneal fat, I believe it should be considered as a true case of hernia.

The recognition of such a hernia is quite simple if the mass be of any size. The smaller ones might be overlooked if the examination were not a careful one. The subjective symptoms of such a lesion are dull, dragging pain in the epigastrium, increased by bending backward or kneeling, sometimes nausea or vomiting or flatulency.

Phillips[2] quotes from another writer a method of distinguishing a true hernia from a fatty mass, namely, the placing of the hand over the mass and causing the patient to cough, when, if a true hernia be present, the observer will get an impression as though water were being squirted against the hand. This writer finds that the most common site is 1½ or 2 inches above the umbilicus.

The operative treatment is as a rule very simple. The contents of the sac are returned to the abdomen, if it be bowel, and in good condition, or ligated off and removed, if it consist of omentum. The sac is closed and the split in the fascia repaired. Coley recommends the Mayo technic as used for umbilical hernia.

1. Bull, W. T., and Coley, W. B.: Results of 1,500 Operations for the Radical Cure of Hernia in Children, Between 1891 and 1904, Med. Rec., New York, March 18, 1905, p. 401.
2. Phillips, John: Epigastric Hernia, Its Importance in the Diagnosis of Obscure Abdominal Conditions, Cleveland Med. Jour., February, 1913, p. 102.
3. Quain, E. P.: Epigastric Hernia, Jour. Minn. Med. Assn., July 15, 1910.
4. Hotchkiss, L. W.: Epigastric Hernia, Ann. Surg., 1911, liv, 78.
5. Moschcowitz, A. V.: Surg., Gynec. and Obst., 1914, xix, 520.

PROGRESSIVE LENTICULAR DEGENERATION

REPORT OF A CASE WITH NECROPSY

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Because of the great interest that is now being manifested in the functions of the lenticular nucleus and the symptoms produced by disease of this structure, I have deemed it important to record the following case of progressive lenticular degeneration. Although a few clinical cases of this condition have been described,[1] so far as I am aware the present report is the first recorded in American literature in which the diagnosis of "progressive lenticular degeneration" was confirmed by necropsy.

History.—E. B., woman, aged 19, was admitted to the Philadelphia Orthopedic Hospital and Infirmary for Nervous Diseases in July, 1912, in the service of Dr. Charles W. Burr. Her parents and close relatives were healthy. Her parents stated that she had always been a somewhat nervous child, but had never been really ill. They declared that she was bright and intelligent, and appeared to be robust, but that occasionally she had been subject to attacks of mild mental depression which lasted a few weeks at a time. The family, however, did not attach any importance to these attacks. In January, 1911, while seemingly in apparent health, she received a slight injury of the right hand. Immediately following this her nervousness increased, and after a few weeks she became forgetful, depressed, dull and indifferent. At this time her speech also became indistinct. This condition, it was stated, progressed slowly.

Physical Examination.—On admission, the patient appeared to be a thin young woman, inclined to listlessness and lethargy. She was uncommunicative, and would not answer questions readily. She appeared to comprehend what was said to her, but after being aroused was childish and silly in her attitude. The pupils were equal in size and reacted normally to light convergence and accommodation. There was no nystagmus, and the ophthalmoscopic examination revealed nothing abnormal. The extra-ocular muscles acted in a normal manner. The muscles innervated by the cranial nerves were not paralyzed, but there was some twitching of the facial muscles. This was more marked on the left side than on the right. The mouth was held partially open, and the tongue, the pharynx and the larynx were normal. At times there was some difficulty in swallowing liquids. Dysarthria was fairly well marked. Hearing was normal. All four extremities were spastic, but were not paralyzed. Muscular power for all movements was good. Intention tremor was well marked in the right upper extremity, but only slightly so in the left. The tremor was of the regular type—to-and-fro movements—sometimes disappearing when the limb was at rest, but becoming quite marked on the right side when any voluntary movement was attempted. There was no ataxia, but the spasticity rendered all the movements awkward and difficult. The condition of the lower extremities was similar to that of the upper extremities, but the tremor was less marked in the former and the spasticity was much greater. There was a tendency to tonic contraction of the legs on the thighs, and also of the adductor muscles, but the legs could, nevertheless, be extended. The tendon reflexes of both the upper and the lower extremities were active and almost normal. The Babinski reflex could not be elicited, and ankle clonus was also absent. The organs of the thorax and abdomen seemed to be normal.

1. Auer: Nerv. and Ment. Dis., July, 1914. Cadwalader, W. B.: Progressive Lenticular Degeneration, THE JOURNAL A. M. A., Oct. 17, 1914, p. 1380.

There was no evidence of disease of the liver, and the abdominal reflexes were active and equal in intensity. Sensation everywhere was unimpaired. Both the urinary analysis and the blood examination were negative. The Wassermann reaction with blood-serum was weakly positive.

From this time on the patient appeared to be growing progressively worse. The Wassermann test was made at various intervals, but except for the slightly positive response elicited at the first examination it was always negative. The speech became more and more indistinct, and the difficulty in swallowing increased. All four extremities gradually became more and more spastic, and the tremor became less pronounced. Extension of the arms, although possible, was accomplished only with difficulty; the legs, however, could not be fully extended at the knees because of contraction. The right leg was constantly held flexed on the thigh, and the thigh flexed on the abdomen. While the patient lay on her left side the right leg was thrown over the left, which was similarly contracted; tremors still persisted in the upper extremities, and there was a lateral tremor of the head. The right elbow was flexed at right angles and the fingers were flexed on the palm of the hand, the degree of flexion varying from time to time. The muscular power, however, did not appear to be greatly diminished and the biceps and triceps reflexes were slightly exaggerated. Thirteen months after the onset, and without any essential change in the condition, the patient died.

NOTES OF THE NECROPSY

Macroscopic Examination.—The macroscopic appearance of the brain and cord was normal. On making a horizontal section through the brain at the level of the base of the ganglia no evidence of softening of the lenticular nucleus could be detected with the naked eye.

Microscopic Examination.—Sections were stained by the hemalum-fuchsin method, and with the van Gieson and Nissl stains. Sections taken at different levels of the spinal cord, when stained by the hemalum-fuchsin method, showed no characteristic lesions, but some of the cells of the anterior horns did appear to stain a darker color than normal, thus suggesting pigmentation. The cells were well formed and the nuclei had not disappeared. When stained by the Weigert method, the white columns did not show any degeneration. There was no round-cell infiltration of the meninges, the blood-vessels were not thickened, and the perivascular spaces, although large, did not contain round cells or granular débris. No evidence of syphilitic infection could be found. Sections made through the medulla oblongata, pons and peduncles revealed similar conditions. No positive evidence of disease was discovered, but the nuclei of the cranial nerves and the cells of the substantia nigra did show occasional evidences of increased pigmentation. Sections of the cortex showed nothing abnormal. The membranes were not infiltrated with round cells, and the nerve-cells and blood-vessels appeared to be normal. Serial sections were made through the basal ganglia of both sides. When examined under the low-power microscope a number of small, irregularly scattered areas of softening were readily detected in the lenticular nuclei of each side. These areas of softening varied considerably in size, the largest being about the size of the head of a pin, whereas numerous points of beginning softening appeared to be much smaller. On the whole, these areas of softening were more numerous in the putamen than in the globus pallidus. In the middle of one of the larger softened areas, as a rule a small artery stood out prominently. Its walls were not thickened, and there was no perivascular infiltration, although the perivascular space was dilated. The surrounding tissue appeared to be contracted, and there was a considerable space between it and the blood-vessel, which contained a few compound granular cells and a quantity of débris. The tissue in the region of the softened area showed marked increase in the neuroglia cells, and when stained with hemalum-fuchsin, appeared to be firmer and denser than normal. The large nerve-cells of the putamen seemed to be less numerous than in the normal condition. The internal capsules, the optic thalamus and the external capsule revealed nothing abnormal. When stained with the Weigert stain, strands of fibers here and there did not take the blue color as readily as they should normally, but positive evidence of degeneration was lacking. No essential difference in the pathologic changes on the two sides was found. The thoracic and abdominal organs were not examined microscopically. The liver did show evidences of cirrhosis, but, unfortunately, a specimen could not be secured for careful study.

During the lifetime of the patient no unqualified diagnosis had been made. Syphilis had been suspected because of the fact that the first Wassermann reaction had been slightly positive. All subsequent examinations, however, had proved to be negative. Lenticular disease had not been suspected until the case came to necropsy, when the clinical picture was immediately revealed. Unfortunately, but little information as to the earliest symptoms that developed could be obtained, but it is probable that the statement of the parents that the patient was subject to frequently recurring attacks of mental depression was of some significance. When the patient was first admitted to the hospital her mentality was distinctly impaired. She was listless, lethargic, and at times emotional. Her memory and, in fact, all the mental processes were impaired so much that at one time the development of dementia praecox had been suggested. From the very beginning there was a distinct tendency to spasticity of all the extremities and of the face, but the well-marked tremor, limited at first almost solely to the right upper limb and to the muscles of the face, very gradually affected the entire musculature, although it never became very noticeable except on voluntary movement. It is probable that the intense spasticity, which began early and seemed to develop more rapidly than the tremor, must have masked or prevented the occurrence of the latter, which might otherwise have been most pronounced. The position assumed by the patient when lying in bed was almost identical with that shown in the photograph of Homan's patient, given in Wilson's article in *Brain*, 1912, page 316. The onset was not unlike that described by Wilson as acute, in that the symptoms developed rapidly; there was nothing, however, to indicate the presence of a toxemic condition; that is, there were no fever, malaise, etc. The patient did not come under observation during this early period, so that nothing definite regarding the onset can be stated. The fact that one Wassermann examination was reported as positive seems of little significance when it is remembered that eight subsequent tests were all negative, and that there was no clinical evidence of syphilis, or any microscopic evidence of lues in the brain, findings that would seem to preclude the possibility of the existence of syphilis.

1710 Locust Street.

Community Nursing. — Dayton, Ohio, has revised its method of public nursing. Instead of having tuberculosis nurses, board of health nurses and special visiting nurses, under the new arrangement each nurse will care for all classes of cases in her district. Under this plan information concerning cases will be more easily transferred and the nurse will become better known in her district and can give more efficient service on account of a better knowledge of families as a unit. Close cooperation with the health department is provided for by each nurse being sworn in as a sanitary inspector with authority to order correction of insanitary conditions. All nurses, whether from municipal or private agencies, are under a single supervision.

SYPHILITIC ULCER OF THE STOMACH

REPORT OF A CASE EXAMINED HISTOLOGICALLY

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In view of the fact that the impression prevails in some quarters that syphilitic ulcer of the stomach is a rather rare condition, and since, in spite of the assertions of others, that it is fairly common, comparatively few cases are reported in the literature, the following case would seem to be of some scientific interest:

A negro laborer, aged 50, complained of pain in the stomach after eating. The family history was negative, except that the wife had had one late miscarriage. The personal history was negative for any trouble bearing on the present illness. There had been no stomach trouble before the onset of the present illness. The patient denied lues but admitted gonorrhea.

The present illness began three months before admission with a sharp pain in the upper epigastrium, radiating to the right side, appearing from one-half to one hour after meals, being fairly constant in appearance, but varying in intensity. It was never severe enough to become a definite colic. Acids appeared to increase the pain. The patient thought that he had lost some weight, the amount of which was not known, but probably about 20 pounds.

Physical examination revealed nothing abnormal except tenderness on pressure over the epigastrium, especially just to the right of the midline. Examination of the blood showed a slight anemia (4,300,000 reds; hemoglobin 65), but nothing else of interest. The Noguchi test for syphilis was positive.

Stomach analysis after an Ewald meal showed an absence of free hydrochloric acid, a total acidity of 25, occult blood and lactic acid and Oppler-Boas bacilli. Microscopic examination of the empty stomach contents, removed by means of a Jutte duodenal tube, revealed nothing abnormal. The tube passed through the pylorus with some little difficulty (1 hour), but as soon as it had become engaged in the pylorus, an interesting change in the microscopic appearance of the contents was noted. Numerous pus cells, with a mixture of red blood cells were noted, along with a large number of cylindrical and globular gastric epithelial cells, giving a very different picture under the microscope from that obtained in the first stomach contents removed. The duodenal contents were normal cytologically and chemically.

The patient was placed in bed, and on specific treatment (mercury and potassium iodid), for two weeks. At the end of this time, there was no demonstrable improvement in his condition. The pain was as bad as before. He was afraid to eat on account of the discomfort. At this time it was noted that the administration of hydrochloric acid after meals seemed to increase the pain.

In view of the absence of any improvement in the gastric or general condition of the patient after two weeks of antiluetic treatment, it was deemed advisable to perform an exploratory laparotomy on the suspicion of the presence of a malignant condition. At operation, a marked annular thickening was made out, encircling the first part of the pyloric region. There was a general enlargement of the pyloric lymph-nodes. Also, several large mesenteric lymph-nodes were observed. Several of the pyloric nodes were as large as Lima beans. A resection of the pylorus was done. The specimen removed at operation showed an annular, apparently active ulcer, almost completely encircling the first part of the pylorus. The submucosa appeared to be most involved. The edges of the ulcer were undermined and soft. The floor was smooth. At one extreme end there appeared to be an attempt at healing. Microscopically, the picture was one of degeneration, chiefly of the submucosa, but affecting also the muscular layers to some extent, with a marked periarteritis of all the arterioles. The mononuclear elements played almost the entire part in the periarteritis. At the point where the attempt at healing was suspected, there was an evident growth of new connective tissue. The large lymph-nodes showed a simple hyperplasia.

The patient made a good recovery from the operation, received a dose of salvarsan and a thorough mercurial treatment, and was as well as ever when last heard from, about eight months after the operation. The histologic specimens were submitted to several competent pathologists and all agreed that the picture was that of a syphilitic periarteritis. No spirochetes could be demonstrated in the sections.

In a search of the literature, I was able to find only one case reported which resembled the foregoing in all respects, even to the resection of the stomach and to the histologic appearance of the lesions. This was reported by Hayem[1] in a man of 60, on whom a resection was done on the suspicion of malignancy, which condition was suggested by the stomach analyses, as it was by the stomach analyses reported above.

It will perhaps be well to state that since this case, I have been very suspicious of all ulcer cases which have fallen into my hands, and although I have seen two since then in which there were positive Wassermann reactions, I have seen no benefit to either from the administration of mercury and potassium iodid, and, in one case, of salvarsan.

I wish to thank Dr. R. W. Knox, chief surgeon of the Southern Pacific Lines, on whose service the case was observed, for permission to publish this report, and also Dr. Martha A. Wood, who prepared the histologic specimens.

1. Hayem: Maladies de l'estomac.

BREAKAGE AND REMOVAL OF EUSTACHIAN APPLICATOR

G. W. STIMSON, M.D., PITTSBURGH

Recognizing the truth of the statement that it is by our mistakes as well as by our successes that we profit, I wish to submit the following short report of an unexpected and unforeseen accident that occurred to me a short time ago:

A woman, aged 20 (a private patient), refined and of a highly nervous temperament, complained of fulness, tinnitus and some impairment of hearing, etc., in her left ear. The diagnosis was tubotympanic catarrh. In order to shrink the mucous membrane of the eustachian tube so that I could get a blast of air freely into the middle ear or pass a eustachian bougie, a Yankauer's eustachian applicator tipped with cotton soaked in a mixture of cocain and epinephrin was passed well into the tube. When this was removed it was discovered that the distal end had broken off, consisting of the cotton tip and an inch of the twisted wire applicator.

Thinking, or rather hoping, that it might have dropped into the pharynx, I made an attempt to pass a gentle blast of air through the tube. No sound could be heard, however, through the ausculting tube, the occlusion being apparently complete. In the hope that the end might be protruding enough from the mouth of the tube to permit its being grasped with forceps and removed, I carefully inspected the eustachian opening with the aid of the Holmes nasopharyngoscope, but there was no sign of the applicator. It then occurred to me to pass another dry cotton-tipped applicator, twirl it around with my thumb and forefinger and withdraw it. This was done and at the first trial, to my gratification, the dry cotton engaged the broken end of the wire and together with its cotton tip it was withdrawn through the catheter.

During the short interval required the patient was blissfully unconscious of what had occurred (which was particularly pleasing on account of her temperament), and only when she inadvertently caught sight of the dangling end did she unconcernedly remark, "Oh, did the cotton come off?"

While I had used Yankauer's eustachian applicators hundreds of times I had never had the slightest trouble in any

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way, and when I sought for a reason I found that before the sterilization of the applicator (which had been used once or twice before) by boiling, the cotton had been burned off, and this had taken the temper out of the wire and made it brittle, although it had withstood the pull that I always make to test whether or not the cotton is perfectly and securely applied. Of course, this should never be done; the cotton should be removed by laying the applicator flat on a glass-top table and scraping it off with a knife or some semisharp instrument.

In a conversation a few days ago, Dr. Yankauer told me that I was the second who had recited to him an occurrence of this sort. I hope that if this accident, which might readily prove most embarrassing, should befall another, he may find in the foregoing report some helpful suggestions and profit.

PROSTATIC ABSCESS OPENED THROUGH THE CYSTO-URETHROSCOPE WITH THE HIGH-FREQUENCY SPARK

ABE NELKEN, M.D., NEW ORLEANS

Abscess of the prostate is one of the less frequent complications of gonorrheal invasion of the posterior urethra. In fully 75 per cent. of the cases, the abscess points toward the urethra, usually causing complete retention of urine and requiring regular catheterization until such time as spontaneous rupture into the urethra occurs. This is usually from seven to ten days after the onset of retention, but I have seen cases that have gone as long as three weeks before being relieved by the abscess discharging into the urethra. Operative interference is rarely justified in these cases, for incision of the abscess either through the perineum or through the urethra by perineal incision is a comparatively radical procedure when it is remembered that it is the rule for such abscesses to rupture into the urethra if given time. The simpler procedure of draining through the rectum, save perhaps in cases about to rupture into that organ, is bad surgical practice for obvious reasons.

I have recently opened a prostatic abscess by means of high-frequency cauterization through the Buerger cysto-urethroscope, and the procedure was so simple and caused the patient so little discomfort that I believe the report may be of interest:

E. L., negro, aged 26, applied at the Touro outclinic for relief because he had been unable to urinate for the past two days. There had been gonorrhea of four weeks' duration. The bladder contained 16 ounces of slightly cloudy urine. Patient returned next day still suffering from retention. Sixteen ounces of urine were again withdrawn. Through the cysto-urethroscope, the posterior urethra was inspected. The mucosa was found to be much injected. Just behind and slightly to the right of the colliculus, distinct bulging could be seen. The flexible electrode was pushed against this bulging area and a rather mild current applied. In thirty seconds there was seen through the instrument a puff, resembling exactly a powder explosion, the field of the instrument rapidly clouded, and I knew that I had opened the abscess. The patient experienced no pain at any stage of the proceedings, which did not last more than five minutes in all. He has been emptying the bladder without difficulty since.

305 Baronne Street.

The Physician's Life.—The study of medicine is an entrancing subject; its practice require an array of virtues whose mere contemplation staggers the mind. One must meet violence with gentleness, ingratitude with equanimity, insult with fortitude, slander with silence. The physician's life is a daily exemplification of the golden rule. The very sensitiveness that inspires sympathy with pain and misery is a weapon in the hands of ignorance and malice wherewith they deal dreadful wounds, wounds which must be endured silently. Resentment can have no place in the physician's mind. Equanimity must be maintained in the face of misapprehension and abuse.—Gadsden (Ala.) *Times-News.*

Special Article

PRACTICAL PHARMACOLOGY*

(Continued from page 341)

IV

A. STIMULANTS: 2. MEDULLARY—ATROPIN GROUP—(Continued)

LOBELIA

The action of lobelia is practically that of its alkaloid, lobelin, which resembles nicotin closely in its preparation and actions.

Tobacco was used formerly in a great variety of conditions, but owing to its careless use and the great toxicity of its alkaloid, many accidents resulted, and it fell into disuse in therapeutics. If the drug which has been studied more frequently should now be considered of little value, it is difficult to explain the advantages to be derived from lobelia. Lobelia itself is no longer used as an emetic as it was formerly. It would seem that physicians are loath to give up a drug which has been so long in use.

Those who wish a detailed description of lobelia, or lobelin, are referred to the larger text-books of pharmacology, for its actions are very complex. The peripheral actions of lobelin, like those of nicotin, may be summarized as consisting of stimulation of the ganglia of the sympathetic and parasympathetic systems throughout the body after small doses, followed by depression or paralysis of these ganglia with large doses. It will thus be seen that lobelin acts on the organs innervated by the sympathetic and parasympathetic systems in opposite directions, depending on the dose, and the complex nature of its effects may be appreciated when one remembers that the actions of these two sets of nerves are commonly antagonistic.

Stimulation and depression of the ganglia induce the same effect on the organ supplied as stimulation and depression of the nerve endings; hence lobelin combines in itself the peripheral actions of a number of drugs including atropin, pilocarpin, epinephrin and others. In addition to these actions it stimulates and later depresses various parts of the central nervous system.

The emetic action, for which lobelia was formerly used, points toward the medullary centers as the seat of this stimulation, and it also stimulates the vagus, vasomotor and respiratory centers.

The action on the vagus ganglia results in cardiac slowing, which is augmented by the stimulation of the vagus center, but this is soon followed by an increased heart-rate due to the depression of the ganglia. The rise of blood-pressure of peripheral origin is also augmented by the central actions.

Lobelia is not used for these effects, and it is now sought to avoid more than slight stimulation of the vomiting center, because dangerous collapse is frequent with large doses.

The treatment of poisoning is symptomatic, severe poisoning with lobelia being rare since its use as an emetic has been abandoned.

Nicotin is excreted by the kidneys in part, and the same is probably true of lobelin.

* This is the fourth of a series of articles on useful drugs—on practical pharmacology for the general practitioner. As soon as completed, these articles, elaborated by additional subjects, will be published in book form.

THERAPEUTIC USES

The principal therapeutic use of lobelia is in asthma, in which it is sought to utilize the paralysis of the vagus in the bronchi. It is not apparent that it has any decided advantages over the mydriatic alkaloids for this purpose, especially as the action of atropin has been found to be more lasting. Lobelia is sometimes used as an expectorant, in which case the nauseant stage should not be exceeded. So-called cardiac asthma, or the presence of severe cardiac disease complicating spasmodic asthma, is a contra-indication for lobelia.

DOSAGE

The herb is seldom employed as such, the tincture being used in doses of 0.5 to 1.5 c.c. (10 to 20 minims).

CAMPHOR

We are unable to offer a rational basis for all the therapeutic uses to which camphor is put, its exact mode of action being unknown, but it is often used as a stimulant of the vasomotor centers, partly as a result of clinical experience and partly on the basis of the results of experiments on animals.

The effects of very large doses of camphor resemble those of picrotoxin so far as the stimulant actions on the medulla are concerned, but there is an essential difference in that even moderate doses of the drugs of the picrotoxin group tend to cause depression after the stimulation has passed, whereas with camphor, depression becomes of importance only after extremely large amounts.

The convulsions which are seen after massive doses of camphor are administered to animals (cats or dogs) are usually attributed to the action on the medulla, but it is probable that other parts of the central nervous system are also concerned in this action, especially in young animals. The convulsions are epileptiform in character.

Moderate doses of camphor stimulate the respiratory center, and while doses comparable to those used in therapeutics have little influence on the respiratory and vasomotor centers, in normal animals, it is quite possible that those centers may be influenced more easily by camphor, as in other drugs, when they have been previously depressed. It will be recalled that doses of strychnin less than those causing marked hyperexcitability have little influence on the normal blood-pressure, and that even convulsive doses cause only a brief, though high, rise of pressure in the normal animal.

Clinical experience seems to show that camphor is sometimes useful in improving the respiration and circulation when collapse is impending, and that it also acts beneficially on the heart, but there are many diametrically opposed observations recorded concerning its clinical value.

Camphor is widely used in Europe for its circulatory actions, especially in threatened cardiac failure, but on the other hand, certain English observers have recently reported that they were unable to detect any constant influence on the circulation after the subcutaneous injection of much larger doses than those commonly used.

It seems probable that camphor may cause some change in the distribution of the blood by constriction of the vessels in one area and simultaneous dilatation of those in another, without increasing the pressure.

It is quite possible that much of the diversity of opinion arises from differences in the methods of employing the drug, both as to the selection of cases in which it is to be used and in the mode of administration.

Camphor resembles the drugs of the picrotoxin group further in that it is absorbed somewhat irregularly, or at least, the actions are elicited to a variable degree after the administration of a given dose, and this probably depends on differences in the ratio of absorption and excretion, as mentioned in the introduction.

It has been observed in laboratory experiments that the results were somewhat more nearly uniform after the oral administration of camphor dissolved in olive oil than when it was given subcutaneously, but the two modes of administration gave only slightly different results. It is probable that the effects may be elicited most rapidly by means of the intraperitonal injection of camphor dissolved in ether, but there are mechanical difficulties involved in the injection, because of the extreme volatility of ether. The method is not recommended.

THERAPEUTIC USES

Camphor is used like other respiratory stimulants, and in collapse for its action on the respiration and circulation, and, as stated, in impending cardiac collapse. It has long been popular in combination with other drugs to promote sweating, and enjoys a certain degree of popularity in the treatment of "colds." It is not commonly used now in this way by physicians.

Other uses of camphor will be discussed in connection with aromatic stimulants and the external applications.

DOSAGE

Camphor is frequently administered internally in doses of from 0.1 to 0.3 gm. (2 to 5 grains) preferably in the form of capsules, cachets, mixtures or solutions. Camphor water, a comparatively weak solution, is given in doses of 15 c.c. (4 fluidrams). Spirit of camphor, a 10 per cent. alcoholic solution, which is the most frequently used preparation of camphor, can be given on sugar, cracked ice or mixed with cold water in doses of from 0.5 to 1.5 c.c. (7 to 20 minims). The liniment of camphor, which as its name indicates is primarily intended for external use, though it is double the strength of the foregoing, can be given in approximately the same dose. It may be directed in the form of an emulsion. It is frequently used for hypodermic administration. A more limpid preparation for the latter purpose can be made by directing the use of oil of sweet almond or olive oil in place of the cotton-seed oil used in the official preparation.

A. STIMULANTS: 3. CEREBRAL—CAFFEIN AND THEOBROMIN

Caffein and theobromin belong to a group of substances which are commonly known as the purins, from the fact that they contain a nucleus which Emile Fischer synthesized and called purin. Xanthin is dioxypurin, and theobromin and caffein are dimethylxanthin and trimethylxanthin, respectively. Another dimethylxanthin, theophyllin, occurs in the leaf of the tea; it has been prepared synthetically and called theocin.

Comment has often been made on the extraordinary extent to which plants which contain caffein are used among nearly all civilized peoples and even among savages, which is all the more remarkable in view of

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the fact that there is nothing in the taste of these plants which serves to direct attention to them. It is well known that savage tribes are constantly on the alert for new poisons, and when a caffein-bearing plant is tested the psychic effects of caffein on any one who has not used it previously could hardly fail to attract attention, and lead to the further use of the plant.

Caffein does not increase the functions of the normal brain under the best conditions for mental work, that is, after sound and refreshing sleep and sufficient rest with freedom from worry, but when small doses are used after severe physical or mental effort it causes fatigue to disappear, and the perception of sensory stimuli and the association of ideas are promoted.

A good illustration of the inability of caffein, or other drug, to improve the best of normal conditions is afforded by the experience of athletes who find that caffein tends to lessen, rather than increase, their performances.

Large doses of caffein interfere with the proper association of ideas; for example, students are unable to study so effectively after large doses as without them. With very large amounts there is actual confusion of thought with ringing in the ears, flashes of light and other signs of mental disturbance. There is also restlessness due to stimulation of the motor areas, and to heightened reflexes in the brain and cord, and with excessive doses there are convulsions similar to those seen in fatal poisoning with strychnin, and death follows from respiratory or cardiac failure.

Caffein stimulates the medullary centers, causing increased respiration and rise of blood-pressure, due to stimulation of the vasomotor centers, but this is complicated by cardiac and vascular effects, and slowing of the heart from stimulation of the vagus center, which is also complicated by the direct, and indirect, cardiac actions. Obviously, the effects on the circulation are complex and variable.

Wakefulness is one of the most frequently observed effects of caffein in those who are unaccustomed to its use, especially when it is taken shortly before bedtime, but it may promote sleep when this is prevented by fatigue.

Caffein relieves certain forms of neuralgia, the etiology of which, and the mechanism of relief are obscure. It appears to enhance the antineuralgic actions of antipyretic drugs, such as antipyrin, with which it is sometimes administered.

Theobromin induces much less psychic stimulation than caffein, but it is convenient to consider them together because of the general similarity in most of their other actions.

The effect of caffein on cardiac muscle is important, but the muscular action is observed more conveniently on skeletal muscle. Extremely small amounts of caffein, such as are utilized when solutions of 1:100,000 or weaker are employed in laboratory experiments, increase the force, efficiency and rapidity of contraction of voluntary muscle, but with greater concentrations the muscle contracts less efficiently, less forcibly and more slowly, and finally goes into rigor.

Nearly all doses of caffein that produce any perceptible effect on the heart increase the rate, without increasing the force, and this effect with the stimulation of the vasomotor center results in at least a temporary rise of pressure, unless it is prevented by the antagonistic dilator action on the vessels themselves. Occasionally the force of the heart-beat is increased without any notable influence on the rate. The continued use of tea or coffee in large amounts gives rise to intermissions, extrasystoles or other forms of cardiac irregularity, which usually disappear when the beverage is discontinued or taken in greater moderation; but it is not certain that these cardiac irregularities are due exclusively to the caffein present in the tea and coffee, for indigestion may play a part in the symptoms.

German clinicians employ caffein in cardiac disease much as they use digitalis, but while these two drugs have a certain degree of synergistic action, the total effect is quite different.

The effects of caffein on the circulation are of importance with reference to its diuretic action. The vasoconstriction which at first affects the vessels of the splanchnic region, causing a rise of blood-pressure, also constricts the renal vessels, so that the secretion of urine may actually show a temporary diminution; but this renal vasoconstriction soon gives place to dilatation while the pressure in the general circulation remains high, thus securing the best circulatory conditions for diuresis. There are many persons in whom caffein and theobromin do not induce active diuresis.

Caffein and theobromin are absorbed fairly readily from the gastro-intestinal tract. Theobromin is relatively insoluble, but there is vastly more fluid in the gastro-intestinal tract than is required to dissolve the largest therapeutic dose. When it is desired to inject these drugs subcutaneously it is necessary to use them in connection with an alkaline salt such as sodium salicylate or sodium benzoate, to produce soluble preparations.

Caffein is probably broken down in the organism to dimethylxanthin before it acts on the kidney, and it and theobromin are excreted partly as dimethylxanthin, and partly as uric acid, but they do not cause any important increase in the output of uric acid under ordinary conditions. A small amount of unchanged caffein may appear in the urine after the administration of very large doses.

It is a matter of common experience that a certain degree of habituation on the part of the central nervous system occurs toward caffein on continued use, but the heart becomes more susceptible if large amounts are taken daily.

Very few fatal cases of poisoning by caffein have been recorded, and in view of the enormous use of the beverages containing it we must suppose that it is not a dangerous drug so far as the immediate peril to life is concerned; but minor toxic symptoms, including nervousness, cardiac irregularities, sleeplessness, lassitude, ill humor and headache are common; these usually call for no other treatment than the discontinuance of the beverage which is causing the trouble.

THERAPEUTIC USES

Caffein is used therapeutically for its diuretic action, especially in dropsical conditions and in nephritis, and also in cardiac disease. Aside from its diuretic action it is not easy to suggest a logical basis for its use in cardiac disease.

Caffein is one of the best of respiratory stimulants, because the stimulation has little tendency to pass into depression even with large doses.

The antagonistic action of caffein to that of morphin and other narcotics is strikingly illustrated in a well-known laboratory experiment. If a cat or dog

be given alcohol until completely anesthetized, and caffein be then injected subcutaneously, the animal will speedily regain consciousness and make coordinated voluntary movements, often rising to its feet, or at least, to a sitting position. If anesthetized with ether previous to the administration of the caffein, it may regain consciousness and not pass under the anesthetic again, as it does after alcohol, owing to the slowness with which the alcohol is eliminated.

Caffein has an equally important, though not so striking, effect in animals under the influence of morphin, and on theoretical grounds, it is difficult to explain why caffein should not be given the preference to atropin as a respiratory stimulant in the treatment of poisoning by morphin and other narcotics.

Caffein in the form of tea or coffee is often useful for the relief of headache due to overexertion and nervousness.

DOSAGE

Caffein and theobromin or the several combinations of these bases with other substances may be administered in doses of from 0.1 to 0.5 gm. (2 to 8 grains). Caffein, the citrated caffein and theobromin are preferably given enclosed in a capsule or cachet or in the form of dry powder to be washed down with a copious draught of cold water. The combinations of caffein and of theobromin with sodium benzoate and sodium salicylate are readily soluble in water and are usually administered in the form of simple solutions.

The intravenous injection of caffein is not without its dangers; under no circumstances should caffein be injected rapidly into the blood-stream. The following experiments illustrate the danger: A cat required 150 mg. (2½ grains) per kilogram of weight to cause death, when a dilute solution was injected very slowly, but in another experiment the heart was stopped at once by the *rapid* injection of as little as 5 mg. (1/12 grain) of caffein per kilogram. It should be remembered that this dose corresponds to about 0.30 gm. (5 grains) of caffein for a man, or less than is commonly taken habitually by many persons daily in the form of tea and coffee without perceptible effects. When one recalls what was said regarding the effect of even fairly dilute solutions of caffein on skeletal muscle, he will appreciate the danger of rapid intravenous injections of even small amounts of caffein. If it is desired to inject the drug directly into the circulation, for which there is no apparent good reason in therapeutics, the dose should not exceed 0.20 gm. (3 grains), which should be dissolved in a fairly large amount of salt solution, and the injection should be made slowly, so that at least one minute should be consumed in the injection. It is not recommended that caffein be injected intravenously in therapeutic practice, however.

MATERIA MEDICA *

Physicians commonly object to using the beverages tea, coffee and cocoa, when the diuretic action of caffein and theobromin is desired, on the ground that too much water is thereby administered. The argument is not always well taken; every patient must have some water, and large doses of caffein and theobromin may be given with strong beverages without increasing the minimum of water, and absorption from the gastro-intestinal tract takes place promptly.

* Owing to lack of space the materia medica of lobelia, camphor and caffein has been largely omitted. It will be included when this series is published in book form.

Therapeutics

PREVENTION IS GREATER THAN CURE

(*Continued from page 247*)

XVII

WHOOPING-COUGH

This infection, which most frequently attacks children, is generally regarded by the public as a trivial disease, and consequently proper treatment and means of prevention of infection of others are frequently not instituted. Even the medical profession for many years did not consider the disease serious, but better statistics, demonstrating the causative agent of death-dealing complications, have shown that whooping-cough is a dangerous disease.

The greatest mortality of whooping-cough is indirect. A large number of those infected die of such complications as bronchial pneumonia, capillary bronchitis, tuberculosis and a few from hemorrhages, while chronic debility, anemia, emphysema, and some lesion of the central nervous system are of not infrequent occurrence. According to the United States *Public Health Reports*, in 1910, whooping-cough had a mortality of 11.4 per hundred thousand population, while scarlet fever had a mortality of 11.6, measles 12.3, and diphtheria 21.4. In young children and infants, whooping-cough causes more deaths than measles, and some statistics show twice as many deaths as measles; 95 per cent. of deaths from whooping-cough occur during the first five years of life, and the majority of these during the first two years.[1] The conclusion is self-evident that babies and young children must not be allowed to acquire whooping-cough if it is possible to prevent it. If the deaths which occur from the diseases which follow as complications from previous whooping-cough were properly recorded as secondary to whooping-cough, the seriousness of this disease would become even more evident than present statistics show.

There is no doubt that this disease is due to a contagium, and that this contagium is contained in the sputum and secretions of the upper air tract, and is transmitted to others by more or less close contact, either by droplets from spraying in sneezing or coughing, or by contact with infected handkerchiefs, napkins or bedclothes, or by contact with freshly sprayed or infected books, pencils, desks, chairs or eating utensils. Doubtless a frequent method of acquiring the disease is by kissing.

It is pretty well proved that the Bordet-Gengou bacillus is the cause of this disease. It seems to be established that the greatest infectivity occurs during the initial stages of whooping-cough, and that even during the active paroxysmal stage there is less liability of infection of others, and in the later stages there is probably no infective agent present. Some investigators even assert that a child should be allowed to return to school long before the paroxysmal stage is over, but that other children in the family of the child affected should not be allowed in school until it is shown that they will not have the disease. The disappearance of the infective bacillus and the consequent lessened danger of giving the disease to others

1. Morse: Whooping-Cough, THE JOURNAL A. M. A., May 31, 1913, p. 1677.

seems to occur because some antibodies develop that prevent the further growth of the germ. It is certainly interesting that this contagious disease ceases to produce its contagium long before the symptoms of the disease have disappeared or the evident disease has ended. Whether or not this will be found true of scarlet fever and measles is of course not yet known, but it is markedly different from typhoid fever, pneumonia and diphtheria, in which the specific germs tend to persist a long time.

It has been shown that some domestic animals may be experimentally infected with whooping-cough; how frequently such animals become accidentally infected and are able to transmit the disease to children is not known. Probably, however, such a source of infection is rare. Kittens, puppies and monkeys have been experimentally infected with this germ.

Mallory and Horner[2] confirmed the opinion that the Bordet-Gengou bacillus is the cause of the infection of whooping-cough. This is a minute bacillus, occurring in large numbers among the cilia of the epithelial cells of the mucous membrane of the trachea and bronchi. It is stated that the germ does not grow above the larynx, although of course by coughing it reaches these parts. This germ is a small coccobacillus, and resembles the bacillus of influenza.

This disease is so readily acquired from one infected that some boards of health not only prohibit children who have it from attending school, but also prohibit their attending Sunday schools or public congregations, riding in public conveyances, playing in public parks, playing with other children on public squares, and from entering stores and theaters. Not to cause these children to be isolated in their homes, when fresh air is of great benefit to them, the boards of health of certain cities order that the child shall be tagged in some manner, perhaps with a button on which "whooping-cough" is printed in plain lettering. Just how carefully such ordinances will be carried out, and just how much they will reduce the frequency of whooping-cough, will be determined after full trial.

This disease occurs largely in epidemics, and young children and babies are apparently most susceptible to the disease. This may be more apparent than real from two reasons: first, because young children, necessarily remaining more in the house, are liable more frequently to come into contact with concentrated infected matter if an infected person comes near them, and secondly, because a large number of older children and the majority of adults have probably had the infection and have become immune. However, when an adult or elderly person acquires the disease it is almost invariably severe. The muscular strength of adults makes the paroxysmal coughing of much greater danger; they are more liable to emphysema, heart strain and hemorrhage. They are not so liable to have pneumonic complications. Whooping-cough, however, even in adult life, is a not infrequent stimulator of a latent tuberculosis. Often an adult, who is in close contact with a whooping-cough patient, and who may have had the disease in childhood, develops a mild form of the disease; at least they have the catarrhal symptoms and cough spasmodically occasionally. Whether the Bordet-Gengou bacillus is present in these cases has not been determined. It is a fact, however, that ordinarily one attack of the disease renders a person immune.

From the foregoing it will be seen how very important it is to make an early diagnosis of whooping-cough. While it is stated that the Bordet-Gengou bacillus may be generally demonstrated in true cases, a method termed the "complement-deviation" test is urged by some investigators. When positive, it is almost conclusive evidence of the disease being present, and when negative conclusive evidence that the disease is not present. Friedlander and Wagner[3] make the statement that in their opinion "the complement-deviation test is of the greatest possible value in the diagnosis at all stages." A description of the technic of this test is given by them.[3]

As both the identification of the Bordet-Gengou bacillus and this complement-fixation test require considerable time and skilled technic, examination of the blood for leukocytosis is suggested as a quicker method of determining whether or not the disease is present. A small leukocytosis, from nine to ten thousand, may be present as early as the third day, while during the paroxysmal stage it may run up to sixty thousand or more. It has been considered that in a suspected patient a leukocytosis from fifteen to thirty thousand (other diseases that cause leukocytosis being excluded), combined with catarrhal symptoms and the opportunity for infection, would give presumptive evidence that the disease developing is whooping-cough. In this leukocytosis there is a relative increase of lymphocytes. It is stated that this leukocytosis may be more or less present for from two to three months, and that in the stages of improvement a mild eosinophilia is found.[4] While leukocytosis is generally present in whooping-cough, its diagnostic importance must always be modified by the possibility that some other cause of this increase in white cells is present. It should also be remembered that leukocytosis is often present in young children from various causes.

The incubation period of pertussis is not definitely known, and may vary from two to ten days; therefore before it is considered safe for a child exposed to this infection to return to school or to play with other children, at least ten days must have elapsed, and perhaps a better working rule is two weeks.

Pathologically, the disease manifests itself by a catarrh of the upper bronchial tubes, trachea, larynx and perhaps pharynx and nose. The secretion is mostly mucus, with perhaps, later, a mucopurulent discharge from secondary infections. There are conditions, moreover, caused by a severe paroxysm of coughing, or by a prolongation of these paroxysms, in other words, hemorrhages; perhaps more or less emphysema; always cardiac strain, and perhaps cardiac dilatation; and, if frequent or repeated coughing, anemia and emaciation. Hemorrhages may occur from the nose, in the eyes, or even in the brain.

The cough is laryngeal in type, is at first dry, and later becomes spasmodic and paroxysmal, thus differing from that of ordinary colds; that is, the coughs occur in series, more or less periodically, or in showers. With these paroxysms there is more or less closing of the larynx, with the attempt at inspiration through

2. Mallory and Horner: Jour. Med. Research, November, 1912. Mallory: Jour. Med. Research, March, 1913.

3. Friedlander, Alfred, and Wagner, E. A.: Diagnosis of Whooping-Cough by the Complement-Deviation Test, Am. Jour. Dis. Child., August, 1914, p. 134.

4. Kolmer, J. A.: The Diagnostic Value of a Blood Examination in Pertussis, Am. Jour. Dis. Child., June, 1911, p. 431.

a narrowed glottis, which causes the characteristic whoop. These paroxysms increase in frequency as the disease progresses, and are precipitated by any change in the atmosphere and by suddenly breathing in cold air, as by laughing, and even by swallowing food, and they sometimes occur without any apparent cause, because of irritation from the germ and its consequences. The number of paroxysms in twenty-four hours varies, but there may be as many as fifty. Early in the disease there may be a slight fever.

TREATMENT

Unless the patient has considerable rise of temperature, it may not be necessary to put him to bed, but, especially with children, the paroxysms are generally diminished if the child is kept in bed for a time, or at least kept quiet. The more active the child, the more paroxysms. Consequently, even without fever, if a child vomits almost every meal, or if he coughs so severely as to cause hemorrhages, or shows that the right side of the heart is becoming strained (which is the side of the heart most affected), he must be put to bed and remain there.

In most communities a schoolchild with whooping-cough is immediately sent home. In only a certain proportion of communities as yet is whooping-cough a reportable disease. There is no question that it should be reported; that the child affected should be isolated as much as possible; that the infection of others should be prevented, if possible, and that other children in the same family and perhaps in the same household or tenement, who are attending school, should be sent home until the period of incubation is past, dating from the last contact with the infected patient.

The methods of contact have already been suggested, and it is needless to emphasize the necessity for the school authorities to cleanse and clean the desk, chair and immediate surroundings of the child, and the books, pencils, etc., that he used. Also the children who sat in close relationship to this infected child should be watched by the medical inspector, or, perhaps, scientifically examined, as suggested above (that is, throat secretions and blood) and those who show any signs of infection should be sent home until it is shown that they have not become infected. These preventive measures seem almost too severe or too great for a disease that has been considered so simple, but, as previously stated, the disease and its results are not simple, and the number of deaths among young children is very great. One of the greatest advances in preventive medicine will be in diminishing this disease that has been so long neglected.

Instruction should be given by the physician to the mother, or whoever cares for the child with whooping-cough, as to how the prevention of infection of others should be carried out, such as the care of handkerchiefs, napkins, etc. In communities where the disease is reportable, the board of health should send instructions to the family.

The actual treatment of this disease may be divided into four heads: (1) to prevent the infection of others; (2) to shorten the disease, if possible; (3) to diminish the severity of the paroxysms; (4) to treat complications as they occur.

The first indication has already been considered.

The second indication is met by general hygiene and by drugs. Fresh air and sunshine, without exposure, are among the greatest mitigators of this disease. If the weather is pleasant, the child should be out doors or on a veranda most of the time. A child does much better in the country or at the seashore, if the season and circumstances will allow it. If the child is too sick, or the weather is such that it is impossible to remain outdoors, he should be isolated in one, or better, in two large rooms, so that while one room is being thoroughly aired and cleansed he may go to the other one. There seems to be no question that the more infected or polluted the atmosphere of a room, the more the child will cough. Whether such an atmosphere simply irritates, or he reinfects himself instead of having his infection diminished, is unimportant. The fact remains that the ventilation must be excellent to diminish the frequency of the paroxysms.

Another important factor is nutrition. If the child vomits a meal as soon as he has eaten it, during a paroxysm, in a few minutes he should be given food again, with the probability that the next paroxysm will not so quickly occur but that the food may remain in the stomach and be digested. A child that receives insufficient nourishment from any reason should be given food more frequently. The character of the food should depend on his condition, and should be that which is found to be less frequently vomited. The best diet is cereal and vegetable, with milk and eggs. The end-products of meat metabolism are likely to raise the excitability and irritability of any one whose nervous system is irritated. For this reason meat should not be given, and no tea or coffee. A patient who is not allowed meat should receive a small dose of iron once or twice a day. Calcium in any simple form may be used as a nervous sedative and a nutrient. Hot baths before going to bed relax the nervous system and quiet the patient. Also massage is sometimes soothing. Of course, it is always essential to have the bowels move daily. Plenty of water should be given the child, as the more moist the mucous membranes, the less they are irritated, and the less frequent the paroxysms. For this object many inhalants have been advised. Perhaps the most important element of these inhalants, whether sprays or steam, is the water that they contain. Sometimes bland petroleum oils atomized and inhaled soothe the irritated mucous membranes.

Various antiseptics have been suggested. The most frequently used is perhaps phenol (carbolic acid) in some form, and very popular has been the vaporization of a phenol combination in the atmosphere of the room. There is no question that phenol tends to benumb peripheral nerves. If much phenol was absorbed it would disturb the kidneys. Exactly what are the germicidal constituents or powers of such inhalants has not been determined. Phenol sprays have been used in from 0.5 to 1 per cent. strength. Antipyrin as a spray and gargle has been much used as a germicide in from 5 to 10 per cent. strength, and has been much lauded in this disease. Quinin sprays, though more disagreeable, have been used in the throat as germicides. Various combinations with thymol and eucalyptol, and other mild aromatic antiseptics, have been used as sprays and gargles or inhalants. It is quite probable that a creosote or other antiseptic inhalant may inhibit the growth of germs in the trachea and upper large bronchi, provided the patient is old enough to cooperate and inhale the vapor into the lungs to that depth. As an application in the pharynx and mouth, hydrogen peroxid solutions, 1:5, would be as efficient as anything that could be offered. Many

times, however, these "antiseptic" inhalants or atomizing substances cause irritation and paroxysms, and must be abolished, while mild alkaline solutions, well represented by ¼ teaspoonful of sodium chlorid and ¼ teaspoonful of sodium bicarbonate in a glass of warm water, cleanse and soothe the throat without causing paroxysms.

There are still many who believe that quinin given internally will shorten the disease. It has not yet been shown that quinin inhibits the growth of the Bordet-Gengou bacillus. If there is any tendency to secondary infection in the nasopharynx, with congestion of the ears, of course quinin should not be given.

Also, to meet this indication and shorten the disease is the vaccine treatment. The exact value of vaccine in this disease has not been demonstrated.

Sill[5] made a study of this treatment in whooping-cough, and found that the dose of the bacillus should be 50 million, and this dose given every other day in ordinary cases, and every day, or 100 million every other day, in severe cases. The injections were given into the abdomen or buttocks. He thinks that the average dose should be determined by the severity of the disease, and not by the age of the child, and he vaccinated a child even as young as 1 month old. He feels sure that the length of the paroxysmal stage of the disease is diminished, and that the paroxysms are diminished in severity.

Immunizing doses, to prevent the development of the disease in other children of the family, have been given in doses of 20 million bacilli, and the dose repeated four or more times, and the disease has been apparently prevented by such vaccination. More recently Hess[6] has made a careful study of the vaccine treatment of whooping-cough, and was disappointed in this treatment of the disease; but he did find that in a certain percentage of cases immunizing doses prevented the development of the disease, although this prophylaxis was far less efficient than is typhoid vaccine in preventing typhoid fever. Positive conclusions, therefore, as to the value of vaccine treatment in whooping-cough cannot yet be made.

The third indication, namely, to diminish the severity of the paroxysms, is of great importance. It has already been stated that the more quiet the child, the less frequent will be the paroxysms. Also, if the child lies down as soon as he begins to cough, he is less likely to vomit. An elastic abdominal belt seems to be of value in controlling the vomiting and the paroxysms of young infants especially. In some patients the paroxysms are so severe that chloroform inhalations have been given to prevent the intensity of the spasms. Also, it has been stated that inhalations of chloroform actually lengthen the time between the paroxysms and shorten the disease. Chloroform inhalations may act as a germicde. On the other hand, the frequent administration of chloroform, even in small doses, is known to injure both heart and kidneys.

The most effective of all medicinal treatments, in the opinion of several authorities, is antipyrin and digitalis. A very good rule for the dosage of antipyrin is 0.05 gm. (about 1 grain) for every year of the child's age. This should be given three or four times a day, depending on the frequency of the paroxysms. The frequency should be diminished as the frequency of the paroxysms diminishes. Coincident with the antipyrin should be given digitalis in the form of the tincture, and in the dose proper for the child's age, and determined by its effect on the child's heart and pulse. The heart needs help, both from the strain of the disease and also as antipyrin might cause some weakening of the heart. The antipyrin acts by causing less irritability of the nervous system and relaxing muscle spasm. Even although the drug has disadvantages, its disadvantages are much less than the harm caused by the whooping-cough paroxysms.

The bromids have been frequently given and in large doses. They act by inhibiting the reflex activity of the nervous system and by more or less dulling the peripheral nerves in the throat and upper air passages. Chloral has been used in order to depress the nervous irritability. Atropin or belladonna have been given in large doses, and their value must be in dulling the peripheral nerves in the irritated part of the body. Atropin is a stimulant, and cannot have any good effect in this disease, unless the dose is very large, and with such large doses atropin intoxication readily occurs, that is, the pulse becomes rapid, the throat dry, the face flushed, and there is likely to be cerebral excitation and perhaps dilated pupils.

Antipyrin is best given to a child in solution, as follows:

		Gm. or c.c.	
℞	Antipyrinae	5	ʒ iss
	Aquae menthae piperitae...	100	fl ʒ iv

M. et Sig: A teaspoonful, in water, three or four times a day.

This dosage is for a child 5 years old.

Various hydrotherapeutic measures are often of value, and the hot bath is always useful in quieting the patient and relieving internal congestions.

The fourth indication, namely, to treat complications as they occur, is almost supererogation, as each complication calls for its proper treatment. However, under this heading the prevention of such complications may be urged. Vomiting may be prevented by quiet, rest for a while after eating, by the abdominal belt and by proper food. Nutrition must be kept up at any cost, and, if necessary, the child given simple liquid nourishment every three hours. Not infrequently cod-liver oil is well borne and is an oil nutriment of great value. Anemia must be prevented by iron. If it is seen that the heart is becoming strained, and the face and throat remain congested even after the paroxysm is over, showing that the right ventricle is in trouble, digitalis should be given and such rest as would be given any damaged heart. This treatment also tends to prevent hemorrhages. Even if the child is weak and the circulation is weak, strychnin is inadvisable, as it stimulates the nervous system and causes or allows more paroxysms to occur.

If the child has a history of enlarged glands or recurrent colds, or has inherited a tendency to tuberculosis, or tuberculosis has been present in the child's family, its convalescence after whooping-cough should be prolonged, and country or seashore air should be urged where possible. Certainly, such a child should not be confined in school until his nutrition has become as good as before the infection with whooping-cough occurred.

(*To be continued*)

5. Sill, E. M.: The Vaccine Treatment of Whooping-Cough, Am. Jour. Dis. Child., May, 1913, p. 379.
6. Hess, A. F.: The Use of a Series of Vaccines in the Prophylaxis and Treatment of an Epidemic of Pertussis, THE JOURNAL A. M. A., Sept. 19, 1914, p. 1007.

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SATURDAY, JANUARY 30, 1915

THE BACTERIOLOGY OF THE WOUNDS IN THE WAR

Precisely as the European conflict has developed hitherto unused and unexpected methods of warfare, so it has brought with it new problems in military surgery and new aspects of surgical bacteriology. In previous issues of THE JOURNAL[1] we have published foreign correspondence indicating the peculiar nature of some of the wounds encountered and referring to some of the characteristics of the suppurations and wound infections and their consequences following the injuries received on the battlefields. The detailed reports[2] of some of the bacteriologic investigations which have been conducted in the French hospitals furnish an interesting account of the microbial flora of the wounds in this campaign, and serve alike to explain some of the consequences and to indicate the surgical procedures that may be called for in the management of the wounded on the French and Belgian frontiers. Examinations made in Metchnikoff's laboratory[3] in Paris indicate that so-called aseptic wounds, such as are produced by bullets and do not suppurate, are frequently free from micro-organisms. Saprophytic forms are found in rare instances and may include members of the proteus group, of which the pathogenic power is recognized to be usually slight. The proteus infections heretofore reported in man have almost invariably occurred in combination with some other micro-organism. The *Bacillus putrificus* (Metchnikoff) has also been found in such wounds, from which the organisms disappear in the course of a few days.

The list of pathogenic bacteria includes in greatest prominence pyogenic cocci, streptococci occasionally being found in almost pure culture, notably in penetrating wounds of the skull and in simple bullet wounds of limbs. The streptococci isolated are described to be of only slight virulence, and erysipelas is reported in few instances at most. The staphylococci, so frequently encountered in the surgical lesions of animals and man, accompany the streptococci in most of the open wounds, particularly when septic foreign substances such as shrapnel balls, fragments of shells and pieces of clothing are present. The wounds infected by these two groups of organisms rarely prove offensive. After drainage and suitable packing with antiseptic gauze, they heal readily and never present a gangrenous appearance.

An added danger, however, rests in the occurrence of the *Bacillus aerogenes capsulatus,* widely known also as the *Bacillus welchii* and in France as *B. perfringens,* though they are sometimes described separately. This organism, according to Doyon and Yamanouchi, has been found associated with staphylococci and streptococci in all the purulent wounds in the cases examined by them in which there was superficial or localized gangrene, benign phlegmonous conditions, or emphysematous gangrene (the *gangrène gazeuse foudroyante* of French writers).

The observation of the presence of the same organism, *Bacillus aerogenes capsulatus,* in the comparatively healthy wounds as well as in those exhibiting subcutaneous emphysema, presents a difficult problem in surgical bacteriology. Apparently it can exist as a harmless saprophyte in the pus of open wounds in the process of healing. It has, of course, long been recognized that the pathogenicity of this organism may be slight, and that its virulence is subject to great variations. Usually, when the infection follows traumatism on the extremities, it is characterized by a rapidly necrotizing inflammation with which there occurs extensive subcutaneous emphysema, and becomes extremely grave. The differences in apparent virulence thus far noted by the French bacteriologists are apparently associated with the differences in the location of the wounds. When the latter are superficial, the severer symptoms attributable to the gas-producing bacillus do not occur; they arise in the deeper parts, in which the environment and closed spaces are more favorable for the propagation of an organism that is preferably anaerobic.

If to the preceding is added the occasional finding of the organism of tetanus, the excitatory agents of the septic and systemic conditions observed are covered for a large number of the cases. The pathogenetic flora appears to be surprisingly uniform in character and to have possessed a relatively feeble virulence up to the time of the present reports. The risks involved depend on the nature of the wounds received, their depth, their ramifications, and the degree of traumatism. So far as bacteriologic considerations and infections are concerned, the surgeons are learn-

1. The Wounded, London Letter, THE JOURNAL A. M. A., Nov. 7, 1914, p. 1683; The Treatment of Wounds Received in Battle, Paris Letter, Nov. 21, 1914, p. 1868; Treatment of the Wounded, London Letter, Nov. 28, 1914, p. 1966; Treatment of Gangrenous Military Wounds, Dec. 12, 1914, p. 2145.

2. Doyon and Yamanouchi: Flore bactérienne des plaies de guerre, Compt. rend. Soc. de biol., 1914, lxxvii, 503 and 512. Weinberg, M.: Recherches bactériologiques sur la gangrène gazeuse, ibid., p. 506; Remarques à propos de la communication de MM. Doyon et Yamanouchi, ibid., p. 515.

3. Doyon and Yamanouchi: Compt. rend. Soc. de biol., 1914, lxxvii, 503 and 512.

ing to distinguish the types and to treat them in a discriminating way rather than by a fixed routine of wound management. They take into cognizance the fact that whereas in most localities wound infection is almost exclusively due to staphylococci and streptococci, on the Franco-Belgian border anaerobic gas-forming organisms are present along with them. Explanation of this has been ventured from several sources. The *Bacillus aerogenes capsulatus* and other anaerobic forms reported are frequently present in the normal intestinal contents, where their presence in abnormally high proportions is indicated by a Gram stain of a smear of the feces. In a report to the sanitary service of the British army in France, Weinberg[4] therefore argues that it is logical to assume that the anaerobic organisms found in the wounds are originally of intestinal derivation. The earth in the trenches from which those suffering with emphysematous gangrene and harboring the Welch bacillus were taken is often soiled with human dejecta and manure. Remnants of filthy clothing likewise find their way into the wounds.

THE EXTENT AND SPREAD OF ROCKY MOUNTAIN SPOTTED FEVER

Since 1902 it has been generally recognized that Rocky Mountain spotted fever is a disease that prevails in certain localities in the Western States. As a result of researches, notably those of Wilson and Chowning, Ricketts and his associates, and of representatives of the Public Health Service, we now have definite knowledge as to the means by which the disease is spread from individual to individual and from one locality to another. A recent report[5] by the Public Health Service on this disease shows it to be present in nine Rocky Mountain and Pacific Coast States. Cases have been reported during more than one tick season from certain localities within these states, and these localities are recognized as being definite areas of infection; that is, they harbor infective wood ticks capable of transmitting Rocky Mountain spotted fever to human beings by their bites.

Outside of the Snake River Valley in southern Idaho and the Great Basin region, the infected areas are rather definitely outlined and small in extent as compared with the total territory in which they are included. Thus the disease is known to be present only in restricted areas of southern and southwestern Montana, southeastern Washington and northeastern California. It is probable that further investigation and the settlement of uninhabited regions in these states may show other isolated areas of infection, but there is no reason for believing that the older communities which have been free from the disease will not remain so unless infective ticks are introduced and the infection thereby established in the community. There is no evidence to show that Rocky Mountain spotted fever has been introduced into any of the present known areas of infection within very recent years, cases having been reported from the different regions involved since the disease was first recognized.

The epidemiologic study of Rocky Mountain spotted fever, however, has been both too brief and too incomplete to enable us to determine whether the disease is at present spreading into uninfected territory or what the danger of its future spread may be. Under ordinary conditions, wood ticks remain close to the place where they are hatched, and none of the animals which have been found susceptible to Rocky Mountain spotted fever infection are great travelers. Also, since the infection in animals is an acute condition, lasting not longer than two weeks, there is slight danger of their spreading the disease in the way that rats may spread bubonic plague.

For these reasons it is believed that the usual way in which the spread of Rocky Mountain spotted fever takes place is by means of infected adult wood ticks attached to their animal hosts, either domestic or wild. These large animals, which may serve as hosts for the adult ticks, may travel many miles before dropping the engorged ticks, and the distribution of the infected areas along the water courses in the Northwest seems to point to this as the probable method by which the infection was spread by deer, elk, buffalo and range cattle.

It would seem also that a real danger exists in the shipment by rail of elk and domestic animals which may harbor infected ticks to points within a radius of at least ten days' travel. It has been found that eastern ticks are capable of transmitting Rocky Mountain spotted fever experimentally, and it is conceivable that infected ticks introduced in this way into any heavily tick-infested part of the United States might establish foci of infection. The process would probably require very favorable conditions and several years' time for its completion. In the meantime the introduction of the ticks will have been forgotten and the true nature of the first case perhaps remain unsuspected.

For these reasons it will be well if physicians, particularly those practicing in rural districts throughout the United States, keep a watch for suspicious cases occurring in the spring and early summer among their patients who have been exposed to tick bites, and that the cases when recognized be reported.

A point of great practical value in Fricks' report is in regard to the value of sheep-grazing as a means of tick eradication, which was first suggested by the same

4. Weinberg, M.: Recherches bactériologiques sur la gangrène gazeuse, Compt. rend. Soc. de Biol., 1914, lxxvii, 506.
5. Fricks, L. D.: Rocky Mountain Spotted Fever: A Report of Its Investigation and of Measures Undertaken for Its Eradication During 1914, Pub. Health Rep., Jan. 15, 1915, p. 148.

author[6] in 1913 and to which we referred at the time.[7] According to Fricks, the four factors on which the success of sheep grazing as a tick eradicative measure depends are, first, the removal of undergrowth and the consequent destruction of good tick country by close grazing; second, the destruction or removal from the sheep range of other mammals, domestic and wild, which may serve as hosts for adult ticks; third, the destruction of the ticks themselves, principally by tangling themselves in the wool of the grazing sheep; fourth, the placing of the problem of tick eradication on an economic basis, so that it may be carried out on an extensive scale without cost to the government, the state or the inhabitants of the valley.

The experiments made during the past season were conducted with two bands of sheep numbering about 1,500. The experiments were begun about the middle of April and terminated about the middle of July, when the sheep were sheared, dipped and returned to their owners. During the experiments, sheep of both bands were searched for dead and live ticks, and it was estimated that over 25,000 adult ticks were destroyed by the 1,500 sheep during this period.

All the observations so far made point to sheep grazing, certain important principles being borne in mind, as a practical, rapid, efficient and economical method of tick eradication in the Bitter Root Valley.

MEDICAL SCHOOL ATTENDANCE

In an article on university registration statistics, *Science*[8] furnishes a tabulation of the attendance at thirty of the universities of the country. The editor suggests that there is a theory that universities and colleges have unusually large increases in numbers of students when national economic conditions are at a low ebb, that is, during "hard times." The registration statistics presented in the article referred to seem to bear this out. The period of depression in the early portion of 1914 was prolonged by the declaration of war. Perhaps as a consequence, at least as a coincidence, three universities, Columbia, California and Pittsburgh, gained over 1,000 students each in all departments; six, Ohio State, Wisconsin, New York University, Minnesota and Pennsylvania, gained more than 500, and five others, Illinois, Nebraska, Cornell, Cincinnati and Michigan, gained over 300.

It is usually said that the increase of registration in hard times is particularly to be noted in the professional schools, apparently because business reverses make men realize that the mental capital required for professional work is of greater permanent value than the more material resources demanded for commercial and financial success. There is a noteworthy increase of registration in dentistry; the University of Pennsylvania has 663 students enrolled in its dental department; Northwestern, 578; Michigan, 318; Iowa State, 302; Minnesota, 253; Pittsburgh, 227, and Harvard, 204. The remarkable increase in all the departments of the University of Pittsburgh has brought that institution into a prominent place in the statistics, for it gained altogether 1,069 students. This gain was exclusive of any addition in numbers from attendance at summer sessions, which swelled the figures for other institutions.

The statistics referred to show that our universities now begin to rival even the largest of the foreign universities in the numbers of students registered. During the present year, and while the war lasts, there will of course be much more educational activity in this country than in any of the countries of Europe. The following universities now have more than 5,000 students in attendance: Columbia, 11,294; California, 8,180; Chicago, 7,131; Wisconsin, 6,696; Pennsylvania, 6,505; Harvard, 6,411; Michigan, 6,319; New York University, 6,142; Cornell, 5,939; Illinois, 5,664.

In regard to the number of medical students, however, the increase shown by the statistics cannot be taken as an index of the enrolments in all medical schools. Statistics gathered by the Council on Medical Education show that practically all of the medical colleges which had adopted higher entrance requirements prior to the beginning of the present session had increased enrolments. Instead of being due to hard times, however, this increase was doubtless influenced by the extensive agitation in recent years pointing to the need of a better preliminary education for students who were to enter on the study of medicine. A more immediate factor, perhaps, is that thirty-seven other medical colleges at the beginning of the present session put into effect for the first time the requirement of one year of collegiate work, in addition to the usual high school education. These thirty-seven colleges naturally had smaller enrolments which more than offset the increased registrations in the colleges referred to above. Incidentally, even the increased registration in dental colleges may have been due less to hard times than to the higher entrance requirements of these thirty-seven medical colleges.

Altogether, instead of there being an increase in the enrolments of medical colleges during this session, it is quite evident from the figures gathered by the Council on Medical Education that there will be a decided decrease. Of about sixty-five medical colleges from which reports have been received, enrolments show that this decrease will be about 8 per cent., as compared with from 3 to 6 per cent. in each of the last few years. The raising of the standards for admission to medical colleges, therefore, has had a favorable effect in decreasing the number of those who take up medicine as a life work. The number has been reduced to nearly the normal supply for this country, and that supply will be much better qualified.

6. Fricks, L. D.: Pub. Health Rep., Aug. 8, 1913.
7. Eradicating Rocky Mountain Spotted Fever, editorial, THE JOURNAL A. M. A., Sept. 13, 1913, p. 871.
8. Science, Dec. 25, 1914.

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CALCIUM AND PARATHYROID TETANY

The removal of the parathyroid glands generally leads to early death preceded by very characteristic nervous and muscular disturbances described under the name of tetany. Various attempts have been made to bring this pathologic phenomenon into a causal relation to a deficiency in calcium in the circulating fluids. Removal of the glands has been alleged to be attended with a loss of calcium, on the one hand, and the injection of salts of this element has repeatedly been demonstrated to suppress the tetany symptoms in affected animals. It is quite conceivable, however, that such an effect of introduction of calcium is due to a sedative action instead of a restoration of an element which may be assumed to be available in abundance in an organism possessed of a bony skeleton.

Experimental investigations in the department of pathology at Columbia University, New York, have attacked the question of the relation of calcium salts to tetany in a somewhat new way.[1] Normal blood was dialyzed in such a manner as to remove from it a large part of its calcium. The dialyzed blood when perfused through an isolated extremity produces an extreme hyperexcitability of the nerves quite like that observed in tetany. Since perfusion with blood dialyzed in precisely the same way against a fluid of the same composition, but containing calcium in the proportion found in the normal blood, causes no hyperexcitability of the nerves, it is evident that the hyperexcitability is due to the lack of the element. This effect can be attained in only a slight degree by replacing the blood of a whole animal with the dialyzed blood, since under the conditions of the experiment the tissues cannot be sufficiently depleted of their calcium. It seems probable to the New York investigators that the parathyroid secretion is not removed by dialysis, but is returned to the body with the dialyzed blood.

To bring this result into relation with the condition in tetany following parathyroidectomy, animals in tetany were bled by MacCallum and his collaborators and the blood was replaced, in one case with normal blood, in the other with dialyzed blood poor in calcium. The normal blood is said to relieve the tetany and lower the excitability immediately, whereas the dialyzed blood does not. This is the further evidence now presented to maintain that in the tetany of parathyroidectomy also the twitching and the hyperexcitability of the nerves is due to lack of calcium in the blood and tissues. An added bit of hypothesis — it must not be taken more seriously — is that the parathyroid secretion governs the conversion of a non-diffusible and physiologically useless combination of calcium into a diffusible form which is essential in maintaining the control of the excitability of the nervous system. It is suggested that the essential product is lost in the excreta and not formed anew in the absence of parathyroid secretion.

1. MacCallum, W. G.; Lambert, R. A., and Vogel, K. M.: The Removal of Calcium from the Blood by Dialysis in the Study of Tetany, Jour. Exper. Med., 1914, xx, 149.

HISTOGENESIS OF NEUROMA, AND REGENERATION OF PERIPHERAL NERVES

So long ago as 1859, Bidder and Kuyfer originated the conception that axis cylinders grow outward from the nerve cells, and that regeneration of nerve fibers is a result of proliferation of the distal end of the axis cylinders, each cylinder having at its end "an incremental cone of growth." This view, which long has held sway, is now being questioned. It has been found that undifferentiated cells from the early medullary tube or neural crest, after remaining undeveloped and dormant in the tissues, may take on activity and, it is asserted, develop into nerve fibers. As seen in neuromas, Weichselbaum interpreted such undifferentiated cells as cells of the sheath of Schwann. Kennedy,[1] on examination of specimens from both ends of a nerve previous to its suture, found irregularly arranged groups of new nerve fibers both centrally and peripherally, and on the distal side were enormous numbers of spindle-shaped nuclei among the nerve fibers which he thinks had arisen by proliferation from the nuclei of the sheath of Schwann. Head and Ham[2] have shown that the ununited distal end of a nerve may remain in a "resting stage" for as long as 540 days. If then united to the central end, it is completely restored. This return to function seems too rapid for the proximal axis cylinders to have grown out to the structures originally supplied by the nerve. Recent observations by Bruce and Dawson[3] on neuromas of the central nervous system are of interest in this connection. Their observations and review of the literature are so complete that practically all that is known of the structure and histogenesis of true neuroma is stated in their article.

In their case, numerous small nodules were scattered through the pons, medulla and the spinal cord, which varied in size from microscopic groups of cells in the midst of fiber tracts or in the wall of a vessel to larger nodules easily visible and displacing the structures about them. In the cord the nodules were formed always in relation to the pia, pial septa or the adventitia of the blood vessels, both the vessels passing into the cord from the pia and those within the cord. In the pons and medulla the nodules were present in both motor and sensory tracts, and were here also closely related to the walls of vessels. The

1. Kennedy: Regeneration of Peripheral Nerves, Tr. Roy. Soc. London, 1887, B, 188, p. 257; On the Histological Changes Occurring in Ununited Divided Nerves, Brit. Med. Jour., 1904, ii, 729.
2. Head and Ham: The Process of Regeneration in an Afferent Nerve, Jour. Physiol., 1904-1905, xxxii, 9.
3. Bruce and Dawson: Multiple Neuromata of the Central Nervous System: Their Structure and Histogenesis, Review of Neurology and Psychiatry, 1913, xi, Nos. 3 to 7, pp. 117, 179, 235, 293.

neuromatous growth appears in the pons and medulla to arise as patches among the fiber tracts, and consisted of cells derived from the sheath of Schwann, which were fusiform and joined each other end to end to form nucleated, protoplasmic tubes pushing along the pial spaces. Small or large bundles of these tubes were found. The number of tubes in each bundle varied from three to twelve or more. These tubes developed central filaments which later became axis cylinders, and about them beginning myelin sheath formation was observed. Complete myelinization did not occur, however, unless the new-formed nerve tube became connected with a central nerve cell through its axis cylinder. These new fibers pushed along the adventitia of the vessels and followed the paths of the glia fibrils or along the pial spaces, most likely because these were paths of least resistance. When obstruction was encountered, they became twisted and tangled, and tended to whorl formation. A section through a nodule at this period in its development gave the appearance of a patch of interlacing, nucleated fibers and protoplasmic tubes twisted and coiled about each other. There were numerous blood vessels in these meshes. Still later, fibrous elements would become more prominent, and tended to displace and conceal the nerve fibers.

In the cord the nodule formation was similar, first starting from proliferated cells of the sheath of Schwann. Protoplasmic tube and whorl formation proceeded as in the brain. Here, however, the tumors were further advanced, and the histogenesis of the neuroma determined with much greater difficulty, owing to the secondary changes in the nodules, namely, fibrosis and sclerosis, which tended to destroy the nerve elements. In a few of the older tumors, individual fibers were found coming in direct contact with nerves of the anterior horn region. About the posterior roots of the cord no tumors were found, but considerable fibrosis had occurred, resulting in degeneration of the nerve sheaths in the fibrosed areas. No passage inward of new nerve fibers into the intermedullary spaces could be found here.

Naturally Bruce and Dawson, influenced by their observations, favor the view that detached neuroblastic cells give rise to true neuromas and to regeneration of nerves. Like other "peripheralists," however, they do not dispute an important influence of the central cell body on the peripheral nerve which aids in completing the myelinization of the nerve fiber and in restoring function.

The Most Difficult Art.—Accurate observation is by far the most difficult art which mankind has ever essayed. A nation may count on furnishing abundance of military talent, plenty of politicians and statesmen, enough of competent lawyers; it may even hope to have gifted artists and authors; but it can scarcely expect to produce a single master of the art of observation in a century. In a century Germany produces one Helmholtz, France one Pasteur, England one Darwin—an American peer of these three is yet to become known.—Minot.

Current Comment

USING THE MEDICAL PROFESSION AS AN ADVERTISING AGENCY

THE JOURNAL has called attention repeatedly to the way in which the medical profession has been used by the exploiters of proprietary medicines for the purpose of introducing their wares to the public. In the past, one of the cheapest methods of putting a "patent medicine" on the market has been to call the stuff an "ethical proprietary," advertise it exclusively in medical journals (whose advertising rates are much less than those of newspapers), freely sample the medical profession, put up the product in packages that are plainly intended to give the public all the information that may be necessary—and let time do the rest. And time has done it. When physicians have awakened to the fact that they have once more been used as tools, and the preparation is very plainly nothing but a nostrum, then the shrewd manufacturer turns his back on the medical profession and goes over openly to the place he belongs—the public press. The Advertising Association of Chicago, in its weekly bulletin for Jan. 4, 1915, prints a letter that has been received by an American advertising man from a German firm that wanted to place a medicinal product on the American market. One paragraph in the letter bears on the matter under discussion. Here it is:

"We beg to mention that the preparations are to be puffed in the first rank and principally so that the physicians (doctors) get acquainted with the same, and it is not necessary to puff them *for the present* in other classes of the public."

We have italicized the three words that have a special significance. Put more crudely, the proprietors of this preparation say: Advertise it at first exclusively to physicians and after they have brought it widely to the attention of the public, then it will be time enough for us to advertise it direct to the public. How long is the medical profession going to retain its unenviable distinction of being a huge advertising agency for the nostrum exploiter?

OSWALD LOEB

There are few pharmacologists capable of doing research work of the highest order, and, at the same time, well-informed, and interested in the broader problems connected with the use of drugs. It is still more rare to find a man thus qualified who has the courage to criticize fearlessly whatever partakes of fraud, humbuggery or exaggeration connected with the exploitation of drugs. Such a man was Oswald Loeb of Göttingen, whose death, while serving at the front with the German army, we briefly noted in our issue of Nov. 21, 1914. We have frequently called attention to the propaganda for reform in proprietary medicines which Professor Heubner, corresponding member of the Council on Pharmacy and Chemistry, head of the department of pharmacology at Göttingen, and one of the editors of the *Therapeutische Monatshefte*, has for some time been carrying on in Ger-

many against great odds, and to the German Arzneimittelkommission, the aims of which are similar to those of our Council on Pharmacy and Chemistry. In this work Professor Loeb took a prominent part, and his critical discussion of new drugs in the *Therapeutische Monatshefte* will long be remembered; he brought to this usually unpopular and thankless work the same earnest love for truth and keenly critical attitude that characterized his research work. As one of the many possible examples of the manner in which he approached new drugs, his discussion of Elarson may be cited.[1] This is a new arsenic preparation put forward by Emil Fischer and G. Klemperer, names held in such high esteem that most writers seem to have been deterred from even questioning their claims. Loeb reviewed their publication, and concluded: "All this is not remarkable; it is also not remarkable that one arsenic compound sometimes succeeds when another seems to fail. When the authors remark that new arsenic compounds do not seem to them to be superfluous, the question arises if this new preparation is not really superfluous. Cannot the same results be obtained with the well-known Fowler's solution, and also, by the administration of smaller doses, not only the patient's alimentary tract but his purse be protected? . . . The clinical reports so far made do not prove that the materia medica has been enriched by it." This questioning attitude concerning Elarson seems to have been fully justified by the recent pharmacologic studies of Joachimoglu.[2] In these days, when critical readers have been forced to view with skepticism much of what appears in German medical publications concerning new drugs, when they feel that these are too often being tried before judges and juries more or less financially interested in the verdict, it was refreshing to read the discussions of Loeb and his co-workers in the *Therapeutische Monatshefte,* and we join the editorial staff of that publication in expressing our appreciation of his work and sorrow at his untimely death.

1. Loeb, Oswald: Therap. Monatsh., 1913, xxvii, 211.
2. Joachimoglu: Arch. f. exper. Path. u. Pharmakol., 1914, lxxviii, 1.

FOOD OF THE TSETSE FLY

Inasmuch as the tsetse flies are now recognized to play a very important rôle in the transmission of infectious organisms connected with the tropical diseases of both man and animals, every feature in the life habits of the insects becomes a matter of medical interest. The sleeping-sickness areas of Africa abound in swarms of these flies. They suck the blood of individuals infected with trypanosomes and thereupon become the carriers of these biologic agents and transmitters of diseases caused by them. The question has arisen whether the tsetse flies habitually feed on blood or whether other types of food are acceptable to them. The members of the Scientific Commission of the Royal Society of London, in Nyasaland, 1912-1914, under the leadership of Surgeon-General Sir David Bruce,[3] have examined the alimentary tracts of a large number of the flies caught in one of the fly areas in Nyasaland. The insects were all caught in the bush, away from the paths. The microscopic inspection showed that the food of the species investigated, *Glossina morsitans,* consists mainly of mammalian blood. Of the 500 flies examined, 288, or 57.6 per cent., were found to contain this in a recognizable state. No measurements were made of the corpuscles, which in most cases were much altered by the digestive processes; but there seemed to be a predominance of the small type of cell, such as occurs in the hartbeest, waterbuck and other antelopes. Of the flies which contained recognizable blood, only 1 per cent. exhibited nucleated blood, which was probably avian rather than reptilian. In no case was vegetable matter noted in the intestinal contents. From such experiments as were conducted in the laboratory it was conjectured that the flies feed naturally at least once in every five or six days. There is no difference in the feeding habits of the males and females.

3. Bruce, David; Hamerton, A. E.; Watson, D. P., and Lady Bruce: The Food of Glossina Morsitans, Proc. Roy. Soc. (B), 1914, lxxxviii, 41.

IMMIGRATION PROBLEMS OF THE FUTURE

Among the many far-reaching effects of the present European war, the influence exerted on immigration assumes a prominent place. The end of the last fiscal year saw a total of 1,485,957 added to our population from this source.[1] The influx of immigration proceeded at the normal rate until it was given a sudden check by the declaration of war in August, when the average daily landing of 3,000 or more at Ellis Island became barely that many a week. There seems to be a general agreement that the cessation of the war will see a renewal of the flood of immigrants which will surpass anything heretofore experienced. The country is alert to this possibility, and preparations to meet the expected increase are already in evidence. The proposed changes in our immigration laws will, if enacted, enforce more rigid physical requirements than any previous legislation on this subject. There is no doubt that the country needs these added safeguards. The truth of this statement is forcibly illustrated by that section of the report of the Committee on Inquiry into the Department of Health, Charities, and Bellevue and Allied Hospitals of New York City, which deals with aliens in institutions.[2] The committee examined, as far as practicable, every patient admitted to Bellevue for a period of thirty-one days from May 19, 1913, to June 18, 1913, inclusive. Of the 3,454 admissions during that period, 363 were aliens who had been in the United States less than five years. The physicians who examined these aliens believed that there were 185 of them suffering from diseases caused by conditions which existed prior to landing in the United States. Among these were 10 cases of pulmonary tuberculosis; 15 cases of venereal disease; 81 psychopathic cases; 2 cases of epilepsy, and 2 of imbecility. This made a total of 110 patients in one month whose admission to the United States was contrary to the federal immigration law. Taking this month as a basis, the committee estimates that in one year Belle-

1. Annual Report of Surgeon-General, U. S. P. H. S., 1914, p. 196.
2. Report of the Committee on Inquiry into the Departments of Health, Charities, and Bellevue and Allied Hospitals, New York, pp. 141-147.

vue Hospital would receive 1,345 alien patients whose exclusion from this country is mandatory under existing federal statutes, while the total number of aliens who would be patients from causes existing prior to landing would be 2,262 yearly. This large number of physically and mentally defective aliens have succeeded in passing the examinations at entrance primarily because there are totally inadequate facilities for examining such a large number in the time allotted for the work. Now that immigration has declined to 3,000 a week, the physicians at Ellis Island have been able to make more thorough examinations. As a result of this intensive scrutiny, the percentage of defects noted has increased from the former 2 or 3 per cent. to about 7 per cent.[3] The difference in the results obtained suggests the advisability of urging the Department of Labor to provide the increased facilities which will be absolutely necessary if the physicians continue their present thorough methods of examination when immigration resumes its normal course.

MYSTERY, THE ESSENTIAL

The entire superstructure of fraud in medicine has for its foundations secrecy and mystery. Take away these elements, and that gigantic monument to human credulity—the "patent medicine" business—crumbles. Hence the frantic efforts of those who have built fortunes through the exploitation of nostrums in opposing every movement that would permit the public to know the drugs it is taking in "patent medicines." About a hundred and fifty years ago Mrs. Stephens in England claimed to have discovered a cure for "gravel and stone in the bladder and kidneys." So skilfully did she call her wares that she deluded ignorant and educated alike into a belief in her discovery. Dr. David Hartley, physician and philosopher, collected and published reports of one hundred and fifty cases—his own among them—showing the value of Mrs. Stephens' "cure." Convinced that Mrs. Stephens had discovered a boon to suffering humanity, many urged her to make public the secret of her formula. Quack-like she refused, but—also quack-like—she offered to give up the formula for five thousand pounds ($25,000). Attempts were made to raise this amount by public subscription, but without success. In spite of the fact that many contributed to this fund, only about thirteen hundred pounds was raised. Parliament was then petitioned to make a grant, which, in due time, it did. Mrs. Stephens got her five thousand pounds and the public got her "formula." The latter was published in the London *Gazette*. The "cure" consisted of egg shells, snails (shells and all), hips and haws, ash-keys, swine cress and various other vegetables all burned to a cinder and the ash mixed with camomile flowers and fennel and other vegetables. But alas! Now that the public knew what was in Mrs. Stephens' nostrum, it would have none of it. The cure fell into disrepute, and finally went the way of all such frauds, into oblivion. Dr. Hartley died of the disease of which he believed Mrs. Stephens had cured him.

3. Summary of the Activities of the Public Health, Hospital, and Budget Committee of the New York Academy of Medicine for 1914.

HEAT, HUMIDITY AND WORKING POWER

The question as to what constitutes a vitiated atmosphere, and wherein the depressing effects of "bad" air are to be found, was recently considered in THE JOURNAL.[1] Of late, temperature and humidity rather than abnormal quantities of the respired gases, carbon dioxid and oxygen, or the presence of harmful expired organic products of respiration, have been held responsible for the untoward consequences of living under conditions of poor ventilation. Drs. Lee and Scott,[2] of the College of Physicians and Surgeons at Columbia University, have recently reported definite objective signs of physical inefficiency in individuals subjected to an atmosphere of high humidity and high temperature. Measurements were made on the working capacity, that is, the total amount of work which excised muscles of animals are capable of doing before exhaustion sets in. The subjects were kept, to cite a specific illustration, at 21 C. (69.8 F.), with an approximate humidity of 54 per cent., in one case, and at 33 C. (91.4 F.), with a humidity of 89 per cent., in the other. The contrasts here quoted represent the distinctions between comfortable atmospheric conditions and the air of a hot, humid summer day. As an outcome there was a marked diminution in both the amount of work performed and the period of working power under the influence of high temperature and humidity. Under these conditions, furthermore, the body temperature also rose somewhat. The facts thus cited confirm by the unbiased testimony of direct experiment what the sensations and psychic responses of man have long since intimated.

1. Ventilation, editorial, THE JOURNAL A. M. A., Nov. 7, 1914, p. 1672.
2. Lee, F. S., and Scott, E. L.: On the Action of Temperature and Humidity on the Organism, Proc. Soc. Exper. Biol. and Med., 1914, xii, 10.

THE SEX OF THE INSANE

Of approximately every five hundred persons in the United States in 1910, there was one an inmate of an insane asylum. The exact figures expressed in a recent report[3] state that in a typical community of 200,000 persons, equally divided as to sex, 208 of the males and 200 of the females would be found in the insane asylums. In the course of a year, 72 males and 60 females would be admitted to the asylums. In 1880 the total number of inmates in insane asylums in the United States included 20,635 males and 20,307 females. Thirty years later the number of male inmates had increased to 98,695, and the number of female inmates to 80,096. The excess of men among admissions in 1910 indicated a still further increase in the proportion, namely, 128 males to 100 females. An analysis of these admissions as to the specific forms of insanity involved brings to light the interesting fact that if alcoholic psychosis and general paralysis are deducted, the proportion of the sexes is practically the same. The diseases mentioned would seem to be those which, generally, are the result of dissipation. Alcohol and syphilis again established their superiority as man's most dangerous allied foes.

3. Hill, Joseph A.: Report on the Insane in the United States, Bureau of the Census, Department of Commerce.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Fellowships in Medicine.—The Preston School of Industry, maintained by the state of California at Ione, Cal., has offered three fellowships of the annual value of $500, plus room and board at the Preston School, available for students of the University of California in medicine, social economics, applied psychology, law, political science or agriculture.

Popular Medical Lectures.—Stanford University Medical School has commenced a series of lectures in Lane Hall. The first lecture, on January 15, was by Dr. Ray Lyman Wilbur, on "Modern Medicine." On January 29, Dr. Wm. Palmer Lucas discussed "Feeble-Mindedness, Its Coincidences and Consequences." Succeeding lectures will be delivered by Dr. Leonard W. Ely, February 12, on "The Problem of the Crippled Child"; by Dr. William Fitch Cheney, February 26, on "Colds"; by Dr. Morton R. Gibbons, March 12, on "How the State Is Providing for the Injured Working Man," and by Dr. Emmett Rixford, March 26, on "Cancer."

New State Board Officers.—At the annual meeting of the State Board of Medical Examiners, held in Sacramento, January 12, the following officers were elected: Dr. Harry E. Alderson, San Francisco, president; Dr. William R. Molony, Los Angeles, vice-president; Dr. Charles B. Pinkham, San Francisco, secretary, and Dr. W. W. Vanderburg, San Francisco, treasurer. During the year 117 certificates to practice were granted, and three licenses were revoked. During the past eleven months 103 physicians passed the examination of the board, 45 failed, and through reciprocity with other states, 348 registered on presentation of credentials.

Personal.—Dr. George Herbert Evans, San Francisco, has been appointed assistant clinical professor of medicine, and Dr. Lewis Sayre Mace, instructor in medicine, in the University of California Medical School.——Dr. Arthur Beardslee has been appointed a member of the lunacy commission of San Francisco, succeeding Dr. Charles C. Wadsworth, deceased.——Dr. Albert Houston, San Mateo, has returned from abroad.——Dr. Francis S. Cook, Brentwood, fractured his right arm January 2, while cranking his automobile.——Dr. Frank L. Horne has resigned as cashier of the bank of Newcastle and will resume the practice of medicine.——Dr. Albert Maldonado, San Francisco, was struck by an automobile recently and sustained painful injuries.——Dr. Newton T. Enloe, Chico, is reported ill with pneumonia at his home.

ILLINOIS

Fenger Fellowship Assigned.—The Fenger Fellowship of $600 for 1915 has been assigned to Dr. George L. Mathers of the resident staff of the Cook County Hospital, Chicago, who will carry on work on certain bacteriologic problems in pneumonia.

Classification of Convicts by Mentality.—The warden of the State Penitentiary, Joliet, has called in consultation, Drs. George A. Zeller, Peoria; Eugene G. Cohn, Hospital, and H. Douglas Singer, director of the State Psychopathic Institute, and George Ordahl, state psychologist, to start plans for the installation of a psychopathic institute in the penitentiary. The plan as outlined deals with the segregation of prisoners according to their mentality. The four most important things to be taken up in connection with every prisoner, are heredity, eugenics, environment and opportunity in life.

The Work of the Visiting Nurses.—During the last fiscal year, the nurses of the Visiting Nurses' Association of Chicago, visited 31,000 individuals, each visit including trained service, instruction in sanitation and hygiene and in some cases financial aid. This work was accomplished with an expenditure of $95,536.77. The association has maintained an average of 71 trained nurses during the year, has sent three nurses abroad to aid in Red Cross work, has assisted other American cities in establishing visiting nurses' associations and has cooperated with many charitable and relief organizations.

INDIANA

Milk-Borne Disease in Gary.—Fifty cases of an unidentified disease believed to be due to infected milk were reported in Gary early in January.

Academy of Medicine Incorporated.—The Kokomo City Academy of Medicine has been incorported with a capital stock of $200. The directors are Drs. George D. Marshall, Lamar R. Knepple and William I. Scott.

Active Health Officer.—Dr. Simon J. Young, Valparaiso, health commissioner of Porter, has inaugurated free Wassermann tests for all who desire. These tests are made at the county laboratory, which is in charge of a full-time laboratory man. He has also planned for a child survey of the county to be conducted by the United States Public Health Service, which has agreed in the near future to detail officers for this work.

Disease Prevention Day to be Officially Recognized.—The following resolution was adopted by both houses of the Indiana Legislature and will undoubtedly be signed by the governor. It originated with the Indiana Society for the Prevention of Tuberculosis.

"WHEREAS: The state of Indiana loses upwards of 9,000 of its citizens each year besides suffering enormous losses from sickness through the prevalence of preventable diseases; and

WHEREAS: The monetary loss entailed thereby reaches into millions of dollars besides the load of human misery and suffering; therefore be it

Resolved by the senate, the house of representatives concurring, That the first Friday in October of each year shall be recognized as Disease Prevention day throughout the state of Indiana."

Personal.—Dr. Fletcher Landgon has opened a hospital in Winchester.——Dr. Walter A. Gekler, superintendent of the State Tuberculosis Sanatorium, Rockville, has resigned to accept the position of associate medical director of the Chicago Municipal Hospital.——Dr. Clarence A. Hartley, Evansville, has been elected president of the conference of secretaries of antituberculosis societies of the state.——Dr. Charles P. Cook has been elected vice-president of the Second National Bank of New Albany.——Dr. Anna I. McKamy, New Albany, has been reelected president of the Floyd County Anti-Tuberculosis Association.——Dr. and Mrs. Frederick C. Eckelman have donated to the city of Elkhart, a 20-foot plat of ground adjoining the new Municipal Building site.——Dr. Theodore Potter, Indianapolis, has been reelected vice-president of the Indiana Society for the Prevention of Tuberculosis.

Legislative Notes.—The Indiana Legislature has under consideration the following bills, some of which have been passed on favorably by one branch of the assembly:

First.—A bill providing that no tablets containing poison in such quantities as seriously to injure the consumer or endanger his life if taken in larger quantities than that prescribed as a dose, may be sold or otherwise dispensed in the state, unless they are V-shaped and coated with red.

Second.—A bill on the housing question designed to classify "disease traps" in a similar manner as "fire traps" provides that when the health authorities shall have knowledge that any dwelling or any part thereof is infected with contagious disease, they may order the place vacated.

Third.—A bill providing for sanitary drinking cups has been passed by the senate. Last year this bill was passed by both houses and vetoed by the governor.

Fourth.—A bill to provide pensions for widowed mothers with one or more children under the age of sixteen years and under this bill a board of child welfare is created for each county to consist of five members, the judge of the circuit court, the superintendent of the schools, the county health commissioner and the chairman of the board of county commissioners and one woman who shall be a mother appointed by the judge of the circuit court.

Fifth.—A eugenic bill has passed the senate that is made to apply to only male candidates for marriage, requesting only men to present certificates of their good health to the county clerk before the marriage license can be obtained.

MARYLAND

Hospital for Crippled Children Incorporated.—Incorporation papers of the Burman Hospital for Crippled Children, a charity planned for the relief of infants who, from accidents or other cause, are likely to become deformed for life, have been filed with the secretary of state. The hospital is non-sectarian and will be managed by a board of directors.

Personal.—Dr. Arthur P. Herring, secretary of the state lunacy commission, at the request of Governor Manning, is making an investigation regarding the care and treatment of the dependent insane throughout the state of South Carolina, and will report to the governor recommendations and suggestions for the better care and treatment of this class of dependents.——Dr. Samuel A. Nichols is said to be seriously

ill at his home near Dayton.——Dr. Henry O. Reik is delivering a series of lectures on "Seeing Nearby America First," at the hall of the Medical and Chirurgical Faculty of Maryland, for the benefit of the faculty building fund.

Health Week.—From February 8 to 13 will be the annual "Health Week" in Baltimore and each evening there will be illustrated lectures by noted physicians. The public will be admitted free to all meetings. Motion pictures will be used to show the great fight in New Orleans against rats carrying the bubonic plague, the manner in which the common housefly manages to prey on human victims, and also tuberculosis films. There will also be an exhibit pertaining to public health work of blind persons and insane patients, the Public Athletic League, fraudulent medical advertisements and one of the latest and most powerful types of the pulmotor. The program mapped out for Health Week includes a number of very interesting events. On February 8 Governor Goldsborough and Dr. Harvey W. Wiley are to deliver addresses; on Tuesday addresses will be delivered by Dr. W. L. Rodman, president-elect of the American Medical Association, on "The Prevention of Cancer," and by Dr. J. C. Bloodgood on "Local Aspects of Cancer"; Wednesday, an address will be given by Dr. Arthur J. Cramp, of THE JOURNAL of the American Medical Association, on "Fakes and Frauds in Medicine," followed by a general discussion; on Thursday, Dr. W. M. Burdick, of the Public Athletic League, will speak on "Therapeutics of Play and Medical Hygiene of Childhood"; on Friday, the address will be by Dr. W. C. Rucker, on "Menaces of Bubonic Plague and the Vaccine," illustrated by slides taken in New Orleans, and on Saturday addresses will be delivered by Drs. L. L. Lumsden, N. R. Gorter and John H. Fulton. Moving pictures will be shown at each session.

MICHIGAN

Aid to Clinic.—The members of the Ingham County Medical Society have voted unanimously to give their services to the free clinic and dispensary, which has been established under the auspices of the Ingham County Nurses' Association.

Society Organized.—The Tri-County Society of Antrim, Charlevoix and Emmett counties was organized at Petoskey, January 14. Dr. Edwin R. Moorman, Pellston, is president, and Dr. George W. Nihart, Petoskey, secretary, of the society.

Free Antitoxin Provided by City of Marquette.—In response to a petition from physicians who urged that provision of free diphtheria antitoxin would be a financial saving to the city, the city council, December 3, made an appropriation for distribution of free antitoxin in certain cases.

Home of Wayne County Medical Society.—The new headquarters purchased by the Wayne County Medical Society contain in addition to the meeting place and committee rooms, club rooms, a library, with about 15,000 volumes, a reading room and nurses' central directory, and the Detroit Clinical Laboratory. The society has at present assets of about $70,000.

Volunteer Medical Service for Destitute.—Fifty physicians of Detroit, who are members of the board of commerce, have volunteered to donate their services free in destitute cases discovered by the board.——The Florence Crittenden Home has been placed at the disposal of the board for confinement cases.——The Michigan Workmen's Mutual Compensation Insurance Company has offered the services of its medical and legal staffs to the board for use in destitute cases.

Small-Pox.—According to Dr. John L. Burkart, secretary of the State Board of Health, in 1,681 out of the 1,995 cases of small-pox reported to the State Board of Health for 1913, there had been no vaccination. Of the entire number of patients, 28 had been vaccinated seven years before the attack, 64 more than seven years before, 143 had been vaccinated but the number of years before not given, and 55 had been vaccinated after exposure. Only three deaths occurred in the total number of cases and these were all among unvaccinated persons.

Personal.—Dr. U. G. Houck, United States inspector, who has been in charge of the Niles office of the Bureau of Animal Industry, since the beginning of the campaign against the foot-and-mouth disease there about the middle of October, has been ordered to go to Glendive, Mont., to organize the work there.——Dr. Athanase E. Gourdeau, Ishpeming, is under treatment in Augustana Hospital, Chicago, for malignant disease of the throat.——Dr. Dennis V. Smith, Ann Arbor, has started for Peking, China, where he will be stationed in a missionary hospital.——Dr. Orley M. Vaughan, Covert, has been elected president of the Citizens' State Bank of South Haven.——Dr. Joseph A. Crowell, Iron Mountain, has been appointed special inspector of the State Board of Health.——Dr. Charles M. Turrell has been appointed police surgeon of Detroit.——The office and residence of Dr. Lee H. Duguid, Custer, were destroyed by fire, January 1, with a loss of about $5,000.

MINNESOTA

New Health Bureau.—At the meeting for organization of the state legislative bureau, January 18, Dr. Cornelius Williams, St. Paul, was elected president, and Dr. H. W. Hill, Minneapolis, secretary.

Personal.—Dr. William G. Crumley, Rochester, has been appointed consulting intern in the American Red Cross Hospital, Paignton, Devonshire, England, and has started for his post of duty.——Dr. John C. Staley, St. Paul, has been appointed a member of the staff of the American Ambulance Hospital at Neuilly, near Paris.

Sanatorium Notes.—Representatives from the county boards of Fairmont, Watonwan, Nicollett, Brown, Martin, Waseca and Blue Earth met at Mankato, January 8, and discussed plans for the establishment of a joint county tuberculosis sanatorium. A committee consisting of one from each county was appointed to study the project and report at a later meeting.——A bill is to be presented at this session of the legislature asking adequate preparation for the care of all tuberculosis patients.——An appropriation of $750,000 is to be asked for to supply the state aid, which is necessary to enable counties to build and maintain their own sanatoriums, and to take care of patients at other municipal institutions. ——Three counties are at present operating sanatoriums, and thirty-six counties have appointed county sanatorium commissions.

NEW YORK

Dinner to Staff.—Dr. J. Wilson Poucher, surgeon-in-chief of St. Francis Hospital, Poughkeepsie, gave a luncheon to the members of the staff of the hospital on January 12.

Medical Society Convention.—The one hundred and ninth annual meeting of the Medical Society of the State of New York will be held in Buffalo April 27 to 30. Dr. Albert T. Lytle, Buffalo, is chairman of the committee on arrangements.

Directors of Tuberculosis Preventorium Meet.—The annual meeting of the directors of the Tuberculosis Preventorium for Children was held recently, at which time Dr. Hemann M. Biggs was reelected president. It was announced that during the past five years 1,600 children had been cared for by the institution.

Tuberculosis Notes.—By a vote of sixteen to eleven the board of supervisors of Otsego County defeated a resolution to submit to vote at the next election a proposition to raise $20,000 for the establishment of a tuberculosis sanatorium. ——Four farms have been sold and one has been rented to the Schenectady syndicate at Eminence. It is said that the property is to be used for a tuberculosis sanatorium.

Bill Abolishing Coroners Drafted.—A bill to do away with the coroner's office and to supplant it with a medical examiner's office has been prepared by Commissioner Wallenstein, and will be presented to the board of estimate after a conference with the City Club and other civic bodies. The bill provides for a chief medical examiner at a salary of $8,000 and assistants for each borough at $6,000. The only function to be performed by the medical examiners is to determine the cause of death. The performance of necropsies will be left to the judgment of the officials concerned in the detection of crime. The chief medical examiner and his assistants will be chosen from a civil service list after an examination is held, which will be open to any citizen of the United States.

Personal.—Dr. Frederick H. Flaherty of Syracuse has been appointed by the president, Dr. Grover W. Wende, to represent the Medical Society of the State of New York on medical education, and Dr. Francis E. Fronczak of Buffalo on public health at the conference on Health and Public Instruction of the American Medical Association in Chicago, February, 1915.——Dr. Isaac W. Brewer, Taughannock Falls, has been appointed district sanitary supervisor.——Lieut. Edward C. Clark, M. C., N. Y., N. G., has been transferred from the Sixty-Fifth to the Third Infantry.——Dr. Emerson B. Lambert has been elected president of the Port Jervis Telephone Company, Dr. Charles N. Skinner secretary-

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treasurer, and Drs. Frank E. Gessner, Emerson B. Lambert and Charles N. Knapp have been elected directors.——Dr. Frank E. Sweatt, Essex, has gone to the Plattsburg Hospital for treatment of heart disease.

New York City

Harvey Society Lecture.—The seventh lecture of the Harvey Society series at the New York Academy of Medicine January 30 is by Prof. Hans Zinsser of Columbia University on "The More Recent Developments in the Study of Anaphylactic Phenomena."

Small-Pox on Spanish Ship.—The health officer of the port of New York, on January 12, removed thirty-five steerage passengers from the steamship *Buenos Ayres* to Hoffman Island for observation and detention. A steerage passenger from Barcelona died from small-pox four days before the ship reached port.

Educational Work Among Midwives.—The Bureau of Child Hygiene of the Health Department, in cooperation with the Midwives' Association, has arranged a series of educational meetings for the midwives of the city. It is proposed to have these talks in German, Polish, Hungarian and Yiddish, by prominent physicians of the respective nationalities.

Personal.—Dr. William H. Park has offered his resignation as dean of the New York University Medical College because of the ruling of the Department of Health that its department heads shall not hold administrative positions elsewhere. Dr. Park is director of laboratories. He will retain his position as professor of bacteriology and hygiene in the college. His resignation will probably not take effect until the end of the college year.——Dr. Samuel Kutscher, who has been seriously ill with blood poisoning, is now reported to be improving.——A fire in the laboratory of Dr. Charles H. Stanley destroyed the fruit of fourteen years' research of the Roentgen ray.——Dr. A. P. H. Sage, a member of the staff of the Kings County Hospital, was operated on for appendicitis, December 24, and is reported convalescent.

Prevention of Unnecessary Blindness.—A campaign for the prevention of unnecessary blindness was recently inaugurated by a meeting at which a lecture on "Sight Saving" was delivered by Dr. Walter B. Weidler. A series of lectures has been arranged by the New York Association for the Blind, in collaboration with the American Medical Association, the Illuminating Engineering Society and the Board of Education. It is intended to extend the campaign to other cities. The undertaking is the result of the experience of the New York Association for the Blind, which has found that the ranks of the blind could be greatly decreased by convincing the public of the need of proper hygiene, proper economic conditions, good lighting, fresh air and exercise. Other lectures will be delivered at the Lighthouse for the Blind on East Fifty-Ninth Street on February 1 and 15 and on March 1 and 15. The speakers will be Dr. Lewis W. Crigler, Dr. Ellice M. Alger, L. B. Marks and Miss Winfred Holt.

PENNSYLVANIA

List of Approved Hospitals.—The Bureau of Medical Education and Licensure has prepared a tentative list of ninety-five hospitals in the state which are approved for internships. The bureau requires that each applicant for license in the state hereafter must have served an internship in an approved hospital.

Personal.—Dr. Theodore L. Hazlett, Pittsburgh, sailed for Europe, December 19, en route to Petrograd, via Archangel, to join the American Red Cross unit on duty with the Russian army.——Dr. Benjamin J. Millard, Mt. Carmel, who has been under treatment at the State Hospital, Fountain Springs, on account of a fractured hip, is reported to be convalescent.——Dr. Edwin B. Marshall, Annville, has been appointed resident physician of the Lebanon Sanatorium.——Dr. Harry Somerville, Chest Springs, cut his arm severely while cutting ice on a pond near his home.——Dr. George W. Mellon, Philadelphia, has started for Europe in charge of insane and mentally deficient immigrants being returned to Switzerland. At the completion of this mission, he will join the American Red Cross in France.——Dr. Samuel C. Jaspan, formerly assistant physician at the Mt. Alto State Sanitarium of the Pennsylvania Department of Health, has resigned and entered practice at Trenton, N. J.——Dr. Charles E. Helm, Bart, had a narrow escape from drowning while crossing a flooded creek at Hoovers Lane.——Dr. John M. Sheedy, Altoona, sustained a comminuted fracture of the left arm, by a fall on a slippery pavement, January 5.

Philadelphia

Gross Lecture.—The annual Samuel D. Gross lecture was delivered at the Jefferson Hospital by J. Chalmers Da Costa, professor of surgery at the Jefferson Medical College.

Contracts Awarded.—The contracts for the construction of a new observation building and a nurses' home at the Philadelphia Hospital for Contagious Diseases, were awarded January 15 for $68,924 and $51,890, respectively.

Gorgas Honored.—Brig.-Gen. William C. Gorgas, Surgeon-General, U. S. Army, was tendered a reception and dinner, January 15, at the University Club, by members of the Sewanee Alumni Association.

Personal.—Dr. Albert P. Brubaker has been reelected president of the Society for Ethical Culture.——Dr. Francis D. Patterson was elected president of the Philadelphia Safety Council January 19.——Dr. E. Kilbourne Tullidge, who sailed for Europe December 8, has been made a member of the medical staff of the Red Cross Hospital, Vienna.

TENNESSEE

Outbreak of Spinal Meningitis.—Cases of spinal meningitis, with three deaths, are reported from the northern part of Rutherford County.

Organization of Medical Inspectors of Schools.—A corps of medical inspectors for the public school of Knoxville was organized on January 12, and assignment of inspectors to schools and appointment of a board of consulting specialists were made.

Personal.—Fire in a bank in the Bank of Commerce & Trust Company's Building, Memphis, January 11, damaged the offices of Drs. James B. McElroy and Hugh B. Kincaid.——Dr. S. M. Covington, College Grove, was stabbed on December 24 by an escaped patient from the Central Hospital for the Insane, Nashville, but his injuries are believed not to be serious.

Vaccination Urged on Citizens.—The occurrence in various places of small-pox has caused vaccination to be urged and very generally practiced throughout the state. According to Dr. R. Q. Lillard, secretary of the State Board of Health, the disease has assumed a very malignant form in certain sections. For several years the type of small-pox encountered has been very mild. In Shelby County more than 3,000 patients have been treated during the past nine years without a single death.

TEXAS

Personal.—Dr. Addeson L. Lincecum, El Campo, has been appointed assistant state health officer.——Dr. John W. Kuykendall, Fort Worth, who was injured in a collision between his automobile and a street car, January 16, is reported to be improving.——Dr. William M. Shytles, Venus, has been appointed a member of the staff of the State Hospital, Terrell.——Dr. Henry F. Lewis, Nugent, sustained serious injuries in a machinery accident, January 11, and is under treatment in a sanatorium in Abilene.——Dr. Roy D. Wilson, Houston, has been elected medical director of the Bankers' Health and Accident Insurance Company.——Dr. George M. Graham, Austin, has been appointed state bacteriologist.——Dr. Murff F. Bledsoe has been elected chairman of the Port Arthur Branch of the Texas Public Health Association.

Review of Health Work.—The report of the State Health Department made by Dr. Ralph Steiner, Austin, reports the following achievements during the present administration: four new gasoline launches added to the quarantine branch of the service and the quarantine station at Aransas Pass repaired and made habitable; sanitary code enacted into law; state sanatorium for the care and treatment of consumptives erected at Carlsbad at approximate cost of $100,000; diphtheria antitoxin, antimeningitis serum and vaccine distributed at nominal prices; establishment of bacteriologic laboratory; manufacture and free distribution of antityphoid vaccine; abolition of common drinking cup in railway trains and stations; inauguration of a hookworm campaign carried out in forty-four counties with over 65,000 microscopic examinations and over 17,000 treatments given.

CANADA

Small-Pox Among Indians.—Small-pox is very prevalent on the Indian Reservation near Brantford, Ontario. The Ontario Board of Health is cooperating with the Indian Department at Ottawa, and Dr. R. W. Bell of the former board has made a special investigation into the outbreak. He

found that the disease had been lurking on the reservation for two or three years, and advises a general vaccination. There have been about sixty cases.

Personal.—Dr. Robert W. Shaw, London, Ontario, has been elected chairman of the Board of Education of that city for 1915.——Sir William Osler has offered his services in connection with the McGill Base Hospital, composed of members of the faculty of medicine, students and nurses from Montreal hospitals, which will leave for the front in the spring. He will join the unit as a supernumerary colonel.——Dr. Henry R. Casgrain, Windsor, Ontario, past president of the Ontario Medical Association, is going to the front, having been appointed to command one of the field hospitals of the second Canadian contingent.——Dr. Henry Howitt, Guelph, Ontario, is spending four months at the Floronton, St. Petersburg, Fla.

Hospital News.—Representatives of the several hospitals in Toronto waited recently on the Hon. W. J. Hanna, provincial secretary, asking that the government would allow them 10 cents per treatment for each outdoor patient. On the figures submitted this would mean an increased grant of $5,000. The minister pointed out that the present was no time to warrant unnecessary increase of the hospital grants. Later on, however, the matter would be considered by the government.——The Royal Victoria Hospital, Montreal, started the present year with an increase in the cost of maintenance, but with fewer patients; it also began with a slight balance to the good, due to the sum of $500,000 left by the late Lord Strathcona. The cost of each patient was $2.20 per day, 12 cents more than in the previous year. Plans for a new pavilion for private patients donated by Mr. J. K. L. Ross in memory of his father, the late Mr. James Ross, were approved.

Canada and the Wounded.—There are 160 Canadian doctors and 103 Canadian nurses serving the allied forces in various ways. There are twenty Canadian nurses and sixteen medical men in the military hospital at Boulogne. Col. Charles Hodgetts, Canadian Red Cross Commissioner in England, states that the Canadian Red Cross Society has contributed $75,000 in cash and paid for twelve motor ambulances as a gift to the British Red Cross Society, in addition to numerous donations of blankets, etc. Col. Lorne Drum of the Canadian Army Medical Corps is in charge of the military hospital under the war office at Hempstead, the Mount Vernon Hospital. The Queen's Canadian Hospital, Shorncliffe, England, is in charge of Dr. Donald Armour and Sir William Osler; the nurses are all Canadians. The Duchess of Connaught Canadian Red Cross Hospital, Cliveden, England, is in charge of Major Gorrell, Ottawa, Canada, and the staff of surgeons and nurses will be supplied by the Canadian army medical corps. There are twelve contingent hospitals on Salisbury Plain, and Major Murday MacLaren, St. John, N. B., is in charge of the chief one. Lieutenant-Colonel Shillington, Ottawa, is in charge of the Hospital Le Touquet, France. Hon. Philippe Roy, Canadian commissioner in Paris, is in charge of the Military Hospital at Dinard, France.—— Lieut.-Col. Carleton Jones, chief of the Canadian Army Medical Services, reports that the outbreak of cerebrospinal meningitis in the Canadian troops on Salisbury Plain is now under control. There have been about twenty deaths from this disease.

GENERAL

Tropical Medical Specialists to Meet.—The American Society of Tropical Medicine will hold its twelfth annual meeting at San Francisco, June 14 to 16.

Bacteriologists Elect.—At the annual meeting of the Society of American Bacteriologists held in Philadelphia, December 29 to 31, the following officers were elected: president, D. H. Burgey; vice-president, John Weinzirl; secretary-treasurer, A. Parker Hitchens, Glen Olden, and delegate to the American Association for the Advancement of Science, Dr. Milton J. Rosenau, Boston. The next regular meeting of the society will be held at the University of Illinois, Urbana, but during the summer a special meeting will be held in San Francisco.

Examination of Army Dentists.—The Surgeon-General of the Army announces that examinations for the appointment of acting dental surgeons will be held at Fort Slocum, N. Y.; Columbus Barracks, Ohio; Jefferson Barracks, Mo.; Fort Logan, Colo., and Fort McDowell, Cal., on April 12. Application blanks and full information can be procured by addressing the "Surgeon-General, U. S. Army, Washington, D. C." Applicants must be citizens of the United States, be between 21 and 27 years of age, graduates of a dental school legally authorized to confer the degree of D.D.S., and be of good moral character and habits. There are nine vacancies to be filled.

Bequests and Donations.—The following bequests and donations have recently been announced:

Presbyterian, St. Luke's German and Roosevelt hospitals, New York City, each about $75,000 by the will of Henry Miller.

The Detroit Tuberculosis Sanitarium, $1,400, the proceeds of a charity ball, November 27.

Dr. F. Le Roy Satterlee, New York City, about $120,000 by the will of Harriet Wells Smith.

Provident Hospital, Chicago, and Oak Park Hospital, each $1,000 by the will of Adeline Freer Sharpe, Oak Park.

Aid Association of the Philadelphia County Medical Society $1,000, an anonymous donation.

Southern Medical Society of Schuylkill County, Pa., a hospital to cost $25,000, to become the property of the society at the death of the donor, by Dr. George K. Binkley, Orwigsburg.

The American Red Cross and Non-Combatants.—At the last annual meeting of the general board of the American Red Cross, at which President Wilson presided and made an address, a resolution was passed that the American Red Cross would not solicit relief for non-combatants in the European war zone, preferring to have such relief given through different national organizations or committees. It will, however, so far as practicable and proper, act as intermediary in transmitting such relief, provided the donors designate the particular country or nation for which this relief is intended. Being a neutral organization, the American Red Cross could not undertake the distribution of such relief, nor undertake its division between different countries or nations. Miss Boardman of the Red Cross expressed the hope that under some revision of the Treaty of Geneva the Red Cross of neutral countries in the future would be enabled to carry on relief work for non-combatants under war conditions.

FOREIGN

Another French Exchange Resumes Publication.—The *Archives des Maladies du Cœur, des Vaisseaux et du Sang*, which has been suspended since the August number, has resumed publication. The publishers announce that it will appear regularly henceforth. Professor Vaquez is the chief of the editorial staff and J. Heitz the general manager. This monthly, devoted exclusively to the heart, vessels and blood, is now in its eighth volume.

WAR NOTES

Aid for Belgian Physicians.—A committee has been organized in Denmark to receive contributions for the aid of the Belgian profession, and the *Ugeskrift for Læger* publishes the list of contributors each week. The second list, January 7, cites nineteen contributors, the sums ranging from 5 to 50 crowns, about $1.35 to $13.50.

Typhus Among Russian Prisoners in Germany.—The *Deutsche medizinische Wochenschrift* states, January 1, that one of the attending physicians and an orderly have contracted exanthematous typhus in tending the Russian prisoners in the prison camp at Cottbus. There are several hundred cases among the prisoners and nine have died according to this journal.

Supply of Drugs in Russia.—According to the *Apotheker-Zeitung*, Russia has always imported nearly all the drugs used There are only a few manufacturing chemists and their output is small; chloroform, for example, has not hitherto been made anywhere in Russia, nor iodin. A scientific expedition has recently been sent to the gulf between Lapland and Archangel, in the north, to investigate algae growing there, with a view to produce iodin from them, and also from the salt in the district, which is said to contain iodin. Arrangements have also been made for the production of chloroform at Moscow.

Scientific Societies Adopt Peace Resolution.—The Federation of American Societies for Experimental Biology, comprising the following societies: Physiological Society, Society of Biological Chemists, Society of Pharmacology and Experimental Therapeutics and the Society for Experimental Pathology; the presiding officers of which are, respectively, Walter B. Cannon, Graham Lusk, Torald Sollman and Richard M. Pearce, at the annual meeting held at St. Louis, December 20, unanimously adopted the following preamble and resolution:

"WHEREAS: Various of the European nations with which many of our members are related by birth, descent, or intellectual friendship are now at war;

"*Resolved*, That we extend to the scientific men within these nations the hope of an early and enduring peace, which will leave the nations with no permanent cause of rancor towards each other, and which will insure to each the glories of scientific and humanitarian achievement in accordance with its own conception of these ideals."

Aid for Belgian Physicians.—Dr. F. F. Simpson, treasurer of the committee of American physicians for the aid of the Belgian profession, announces that for the week ending Jan. 23, 1915, the following contributions have been received:

Dr. W. A. Coventry, Duluth Minn.	$ 10.00
Dr. A. William Reggio, Boston, Mass.	25.00
Dr. Edward B. Heckel, Pittsburgh, Pa.	25.00
Dr. T. R. Williams, Puxsutawney, Pa.	10.00
Dr. J. Knox Simpson, Jacksonville, Fla.	10.00
Sonoma Co. Medical Society, Sebastopol, Cal.	50.00
Anonymous—E, Pittsburgh, Pa.	10.00
Dr. A. B. Hirsh, Philadelphia, Pa.	5.00
Dr. Henry Eastman, Pittsburgh, Pa.	10.00
Dr. H. S. Steensland, Syracuse, N. Y.	2.00
Washington Co. Medical Soc., Marietta, Ohio	25.00
Dr. Lewis S. Pilcher, Brooklyn, N. Y.	25.00
Dr. M. Iverson, Stoughton, Wis.	5.00
Dr. A. H. Traver, Albany, N. Y.	5.00
Dr. Carl B. Drake, St. Paul, Minn.	5.00
Dr. Leonard Freeman, Denver, Colo.	5.00
Dr. Howard C. Taylor, New York, N. Y.	25.00
Dr. Walter F. Donaldson, Pittsburgh, Pa.	5.00
Deer Lodge Co. Medical Soc., Anaconda, Mont.	75.00
Dr. W. S. Zimmerman, Spartansburg, S. C.	10.00
Dr. H. MacVicker Smith, Pittsburgh, Pa.	5.00
Dr. Ethel D. Brown, New York, N. Y.	5.00
Dr. Brown Pusey, Chicago, Ill.	25.00
Total	$ 377.00
Previously reported receipts	1,414.00
Total receipts	$1,791.00
Previously reported disbursements	$990.00
Disbursements week ending Jan. 23	660.00
Total disbursements	$1,650.00
Balance	$141.00

Diplomatic arrangements have just been completed whereby drugs and instruments for civilian physicians may be sent into Belgium. Recent advices from Dr. Herbert Spencer of London show that our Belgian colleagues are literally starving. Three hundred additional boxes of food have been purchased at a cost of $660. Checks for this fund should be sent to F. F. Simpson, treasurer, Pittsburgh.

Ambulance Construction Commission.—At the instance of Mr. Henry S. Wellcome, the founder of the Wellcome Bureau of Scientific Research, a commission has been formed to standardize the patterns and improve the type of field motor ambulances. Sir Frederick Treves, whose long experience and distinguished service specially fit him for the task, has consented to be the chairman. The admiralty is represented by the director-general of the medical department, R. N., while the quartermaster general to the forces and the Acting director-general, Army Medical Service, represent the war office. The British Red Cross Society is, of course, represented by Sir Frederick Treves, and the St. John Ambulance Association by Sir Claude Macdonald and Sir John Furley. The remaining members are all experts. This commission will first and foremost act as a judging committee for the award of prizes of the value of $10,000 provided by the Wellcome Bureau of Scientific Research. These prizes are offered for the best designs of an ambulance body which shall fit a standard pattern motor chassis for field motor ambulances. The last day for the receipt of competing designs is June 30, 1915. It is hoped that the competition will bring in a number of ingenious designs, from which the ideal field ambulance body will be evolved. It may be asked why the competition is restricted to designs for a body and not for the complete ambulance, including a chassis. The reason is that a chassis takes much longer to build than a body, and that, when war breaks out, it is impossible to get at short notice anything like a sufficient number of any one type of chassis. On the other hand, a standardized body to fit any chassis of approved dimensions can be constructed in numbers at comparatively short notice, and a perfected body is needed to insure complete comfort for the wounded. It is hoped that the information obtained by the competition, and in other ways, will be published in some permanent form, available for future reference. Probably in addition to one design of special excellence, there will be submitted various suggestions which may be incorporated in the pattern design approved by the commission. For these a portion of the prize money has been set apart. The first prize is of $5,000, the second $2,500 and the third of $1,500. All details of conditions may be obtained from the secretary, the Ambulance Construction Commission, 10 Henrietta Street, Cavendish Square, London, W. England. The competition is open to citizens of all nations.

LONDON LETTER

LONDON, Jan. 15, 1915.

The War

THE HEALTH OF THE TROOPS AT THE FRONT

So far the amount of disease among the troops at the front has been very small, and the two zymotic diseases most to be feared have given little trouble. Dysentery has been absent, and the incidence of typhoid fever has been much below an annual rate of 2 per thousand. The case mortality has been little over 8 per cent. Great vigilance is displayed by the medical officers in promptly isolating suspected cases. The value of antityphoid inoculation is shown by the following results: The men brought into the field fall into three classes: (1) "fully protected" men, those who have received two doses of Wright's antityphoid serum within the last two years; (2) "partly protected" men, those who have not been inoculated within the past two years, or who have received only one dose, and (3) "unprotected" men, those who have never been inoculated. It is among the latter class that all the deaths hitherto recorded have occurred. Furthermore, this class has supplied about sixteen times as many cases as the fully protected class, and about six times as many cases as the partly protected. Arrangements have been made for the isolation of infectious diseases at all the British base hospitals, and an institution specially for this purpose is maintained near Boulogne. It consists of a three-story stone building on the edge of a sandy beach, and about 100 bathing huts. The building is used entirely for typhoid cases, the huts for other infectious diseases. In England provision has also been made for the care of soldiers brought home with infectious diseases. It is generations since British troops fought so near home, and the small number of home camps in times of peace have not required special military fever hospitals. Hospital accommodation has been provided for 150 acute infectious cases at a country house. In order to reduce the danger from convalescent carriers, the hut system is being installed on a scale which allows a large number of convalescents to be kept under observation, if the necessity should arise.

HOSPITAL ACCOMMODATION FOR THE INDIAN WOUNDED IN ENGLAND

The peculiar difficulties attending the care of the Indian wounded from our expeditionary force, such as language, caste, and the religious customs with regard to diet, have rendered special provision necessary not only at the front but also in England. At the fashionable and salubrious watering place of Brighton, accommodation has been provided for 3,000 wounded Indians. The general hospital for Indian troops will be located in three main blocks consisting of the Corn Exchange lent by the corporation, a school lent by the educational authority, and the Brighton Union, lent by the guardians. In addition to a large staff drawn from the medical service of the Indian army, an Indian physician and a senior Indian medical student have been appointed for each fifty beds. The sanitary arrangements have been carried out to suit the necessities and habits of the Indians. Thus the baths are all shower baths. The closets are stand-up water closets. The language difficulty has been overcome. The medical officers practically all speak the dialects; many Indian medical physicians and students are engaged, and the patients can often speak a little English. Notices are posted up in Urdu and Nagari. The cooking of the food presents special difficulties. There are two sets of cooking arrangements in each hospital, one for the Hindus and the other for the Mussulmans. The Ghurkas and Sikhs join the former. The utensils, etc., are kept strictly separate. The dietary is not very elaborate. Chupatties, which are made of plain flour and water, by hand on an iron plate, are a favorite food. When they have to a certain extent set, they are tossed from side to side by the cook, in pancake fashion. Other articles of consumption are curry and rice. The strict Mohammedans do not touch alcohol.

THE AUSTRALIAN MEDICAL SERVICE

The Australian expeditionary force which was sent to England to complete its training has been detained in Egypt because of the threatened invasion of that country by the Turks. It has an excellent medical service organized so as to correspond as near as practicable with the organization laid down for the imperial services, thereby enabling the Australian units at once to take their place side by side with the medical services in any part of the British Empire. At the outbreak of the war, three field ambulances and one light horse field ambulance (the latter corresponding to a cavalry

field ambulance) were mobilized on war establishment, complete in every detail as to personnel, equipment, vehicles and horses. Almost simultaneously with this, the medical service required for lines of communication was also set going, comprising one clearing hospital, two stationary hospitals and two general hospitals. An additional light horse field ambulance and field ambulance were also mobilized. All these units correspond as regards personnel, equipment, nursing staff and accommodation for patients with those laid down for the imperial services. The complete units will afford accommodation for over 2,000 patients. The personnel is drawn not only from medical officers on the active list but also from those on what is known as the Australian Army Medical Corps Reserve. Every state has sent in its quota, the general principle being that each unit will be complete in its equipment and transport.

THE EFFECTS ON CIVIL PRACTICE

In my last letter I mentioned certain suggestions which had been made to the war office and accepted by it to prevent some of the difficulties arising from the dislocation of civil practice in consequence of physicians undertaking military duties. Some further methods were mentioned at a meeting of physicians in Glasgow by Dr. Norman Walker, who delivered an address on the work of the Scottish Medical Service Emergency Committee. This committee was constituted at the outbreak of the war, and consists of the heads of the Scottish medical schools, with certain representative physicians. It has issued a memorandum of which he discussed and explained the following points: It is held that the fee offered to a locum tenens taking the work of a physician engaged in military duty should not exceed $21 a week. Retired physicians willing to enable their brethren to serve their country were asked to send their names to the committee, and a good many names were thus obtained. A difficulty arose in that it was not easy for a physician in the neighborhood of 60 to face a hard country or colliery practice. Some had heroically undertaken work which would tax their strength. On the other hand, there are districts in which the majority of the work is done in the consulting room and can easily be performed by older men. A suggestion was made to school authorities that their whole-time medical officers should be allowed to give part of their time to general work. A fourth suggestion is that the visiting staffs of large hospitals, infirmaries and asylums should consent to a reduction of the number of medical residents and clinical assistants, and undertake a portion of the work assigned to these. This has been carried out. All hospitals have cut down their resident staffs. A distinguished professor of medicine is acting as his own house surgeon, and a well-known professor of anatomy has acted as a house surgeon in the hospital attached to his school. A fifth suggestion is that in the larger towns, young physicians whose practices are yet small should in pairs make an arrangement whereby one undertook the whole town practice for a period, while the other acted in the country for a colleague absent on duty. Women in the position of locum tenens had proved useful, though at first their offers were not received with enthusiasm. However, once the novelty wore off their services were appreciated.

THE DECLINE IN THE NUMBER OF MEDICAL STUDENTS AT SCHOOLS

The shortage of medical students attending the schools in consequence of so many having gone to the front as dressers, or in the fighting line, has given rise, as pointed out in previous letters, to serious anxiety as to the supply of physicians in the future. The army authorities have taken the view that the best thing a medical student, who desires to serve his country, can do is to complete his studies and qualify as soon as possible. Accordingly, an army order has been issued giving permission to any student who has gone to the front to return home to complete his studies, if he desires to do so. Owing to the impossibility of obtaining resident medical officers in the hospitals, senior students are being employed in some cases in their places.

THE RELIEF OF BELGIAN DOCTORS AND PHARMACISTS

The fund organized by the profession for the relief of Belgian physicians and pharmacists, both those remaining in their own country and those who are refugees in England, is receiving wide and generous support from the profession. An executive committee has been formed, and a general committee is in course of formation which is of the most representative character. It includes the presidents of the colleges of physicians and surgeons and of the Royal Society of Medicine, the General Medical Council and the provincial colleges, the chairman of the Council of the British Medical Association, the professors of medicine at the universities and the editors of the *Lancet* and *British Medical Journal*. It is recognized that while the German occupation lasts, it will not be possible to do more for the doctors and pharmacists remaining in Belgium than to dispatch certain packets of medical material with which the misery may be relieved. A start has been made in this direction, and packets will be sent regularly when it is known that they can reach their destinations without interference. The government has issued an order giving the holders of the medical diplomas of Belgian universities the right to practice in this country during the war.

BRITISH PHYSICIANS EXAMINED IN MEDICINE FOR THEIR LIVES

Two civilian physicians attached to the British Red Cross for the first Belgian unit have arrived in London from Germany after an extraordinary experience. Early in August they passed through Namur in order to form a hospital for the Belgians nearer the frontier. They were captured by the advancing Germans, who accused them of being spies, and were sent to Cologne, where they were thrown into a military prison and kept in solitary confinement for fifteen days. Not only were they closely cross-examined in the ordinary manner and told they were on trial for their lives, but also they were put through a medical examination by the chief medical officer of the command. They were asked many questions which no layman could answer, such as the symptoms of pneumonia and typhoid fever and their bacteriology, anatomic questions on the leg, and what organs would be perforated if the abdomen was pierced by a bayonet. They were not told whether the German medical officer regarded their standard of knowledge as good, but they must have "passed," as they were eventually released.

THE MANUFACTURE OF THYMOL

Hitherto the antiseptic thymol has been almost entirely manufactured in Germany, although the ajowan seeds, which are almost the sole source of the oil from which thymol is produced, are grown on a large scale only in India. The cutting off of the supplies of thymol from Germany has increased the price eightfold, and it is even now $5 a pound, as against $1.25 before the war. As the manufacturing process is quite simple, preparations are now being made to produce the drug in this country. Fortunately also a British possession provides a substitute for thymol if required. This is carvacrol, obtained from oils derived from a variety of plants, but particularly from the origanum of Cyprus.

INOCULATION AGAINST TYPHOID FEVER

Notwithstanding the great value of inoculation against typhoid fever of the soldiers going to the front, the anti-vivisection and antivaccination fanatics are carrying on an active campaign against it. As inoculation is not compulsory, this campaign is mischievous. Sir William Osler has issued in the lay press a strong appeal to soldiers, telling them they are leaving their homes in defense of principles for which their fathers fought and died. He says it is their duty to preserve their health, and that diseases are more fatal than powder and shot. More than half the mortality in the wars of the nineteenth century was due to preventable diseases such as typhus, typhoid, cholera, malaria and dysentery. In the South African War more soldiers died from typhoid than from wounds. The disease is prevalent in parts of northwest France and Belgium. The efficiency of vaccination against typhoid has been proved, and it is followed by slight illness, rarely by anything more serious. Among 22,000 Canadian soldiers vaccinated in this country, only twenty-two had symptoms other than the usual malaise and headache.

Excessive Sickness Claims Under the National Insurance Act

Considerable dissatisfaction with the working of the national insurance act has been expressed by friendly societies in consequence of excessive claims for illness. An official inquiry has been held, and a report made, in which it is stated that many of the physicians, having had no previous experience, do not correctly apprehend the nature of their task, the value to be placed on their certificates, the relation in which they should stand to the society, or their responsibility to the working of the whole machine. Others who have acted in the past as friendly society physicians no longer consider themselves bound to look after the interests of the societies. (To understand this, it must be borne in mind that the national insurance act removed physicians from all control by friendly societies who no longer appoint them.

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They are simply chosen individually by the members.) As their remuneration depends on the number of panel patients they have, it is alleged that the fear of giving offense induces them to grant certificates for trivial illnesses, and to continue them after the incapacity has ceased. The committee, however, adds that there has been little evidence of definite acts of deliberate false certification. The insurance of women was a comparatively new experience under the act, and the claims for sickness so exceeded the actuarial calculation that the government had to make a special grant. The committee finds that the causes for this excess are: (1) the widespread ignorance among women of what is involved in insurance, leading them to feel that they are losing something if they do not get out more than they have paid in; (2) the large proportion of ill-paid and ill-fed women; (3) the fact that the sickness benefit is often equal to or more than the woman's earnings when working; (4) the great difficulty of supervising their behavior during sickness so that it is possible for them to do ordinary housework, or even extraordinary housework, while they are supposed to be incapable of work; (5) the loss of wages by women, generally less serious than in the case of men, and (6) illness accompanying pregnancy. Beyond these contributory causes for the excessive claims by women, the committee is convinced that the main cause of the excess is that the incidence of sickness among women employed in industrial occupations is much heavier than was anticipated, or than could have been calculated when the actuarial estimate was made. In many cases the excessive predisposition to disease arose from conditions of past childbearing, but the evidence fully substantiates the view that "experience exceeds the provision made under the act." The committee suggests as a remedy the employment of women in administering women's societies. The committee thinks that immediate steps need to be taken to produce a firm attitude by the profession with regard to improper claims for sickness. They approve the appointment of medical referees, who should be whole time officials, so that there would be no danger that practice of a panel physician or a private physician would conflict with their duties. They would be of value when a panel physician was in a state of honest doubt and desired a second opinion, and also because of the hesitation of panel physicians to declare persons able to work for fear of financial loss. The report is one more example of the dangers of socialistic schemes, however beneficently designed. The ideal of Mr. Lloyd-George that every worker should be insured against the cost of illness was a fine one, but he knew little of the technical difficulties of his gigantic scheme. A national fund into which every one can put his hand is a standing temptation to abuses. The motive which individual loss provides against waste is removed. Under the friendly societies in the past, the members exercised a check against the robbery of their funds. The societies still control the funds, but with so much state interefernce and the loss of control over physicians, their power is less and their interest is weakened.

New Radium Laboratories at Manchester

Until recently there was in this country only one establishment devoted to radium therapy, the London Radium Institute. Now, in consequence of public subscription, radium laboratories have been opened at the Manchester Infirmary which contain radium to the value of $100,000. There is accommodation for the treatment of fifteen patients a day.

The Scarcity of Physicians

The scarcity of physicians created by the war is illustrated by the statement of the secretary of the Wolverhampton General Hospital, at a meeting of the committee. He could well remember the time when it was quite a common thing, when they advertised for a house surgeon or physician, to receive from ten to twenty applications for one post. Things gradually became worse, however, until, advertise as they would, they absolutely failed to get any applications for the post vacant. He was sent off to London and visited nine of the leading medical schools, and the result was that after extreme difficulty the resident post was filled. As soon as it was known that medical officers were wanted in the army and navy, all the resident medical staff volunteered. On two occasions it had been impossible for members of the honorary staff to see all the outpatients. He had gone to London again, and did the round of the medical schools. He could not find a single man who wanted employment as a doctor, and theirs was not the only hospital in such a position. They had had to fall back on medical women. But though obtainable, they too were scarce. Their resident staff now consists of one man and three women.

PARIS LETTER

PARIS, Jan. 7, 1915.

The War

INFORMATION ON THE SURGERY OF WAR

The present war is bound to furnish a rich harvest of interesting and instructive reports on the wounds of war. Such matters are beginning to be reported and discussed before the scientific societies of Paris, especially the Académie des sciences, the Académie de médecine and the Société de chirurgie. In my letters I shall endeavor to summarize the most interesting of these papers for the readers of THE JOURNAL. Moreover, in some provincial centers there is also scientific activity which deserves to be reported. Thus in one of the temporary hospitals of Bordeaux, directed by Dr. Pousson, clinical professor of diseases of the urinary tract at the Faculté de médecine of that city, the physicians on the staff of the hospital have recently organized to hold weekly scientific meetings at which the results of their work will be reported. The proceedings will be published in a bulletin. Among the subjects already treated are vascular surgery, cerebral surgery and genito-urinary surgery.

TRANSMISSION TO THEIR FAMILIES OF NEWS OF WOUNDED SOLDIERS

At the beginning of the war, there was much complaint from the public because of the lack of news concerning the wounded. At present, things have been completely changed (THE JOURNAL, Dec. 19, 1914, p. 2242). The war department's very practical arrangements for this purpose deserve to be known. Suppose for instance, that a number of wounded men have just arrived at a base hospital. The physician in charge examines the wounds and, if necessary, verifies, completes and rectifies the diagnosis made at the point where the wounded man received his first treatment. This diagnosis, made on the same tag which indicates whether or not the patient has received tetanus antitoxin, is pinned on the wounded man's cap. The same day the physician fills out a special postal-card for each patient. These cards are of different color from ordinary postal-cards; on one side they bear, along with the address of the family, the name of the wounded man and that of the hospital where he is being cared for. The other side of the card is divided into two parts one of which is reserved for the wishes expressed by the patient and may be filled out by himself personally. The other is to be filled out and signed by the physician with indication of the character of the disease or wound. Each week thereafter, a postal-card is sent to keep the family constantly informed of the patient's condition. This bulletin of health is to be sent with the consent of the patient and to the person designated by him. This postal-card service evidently represents a sometimes considerable increase of work for the physician, but this is justified by the results.

THE ACTIVITY OF THE SOCIETY FOR AIDING THE WOUNDED

The oldest of our three Red Cross societies, the Société de secours aux blessés militaires, has just published some figures summarizing its work since the beginning of hostilities. In the region of the east, the society has organized 93 first-aid stations, 83 railway-station infirmaries and 35 canteens. It has since organized 771 auxiliary hospitals containing to-day 56,579 beds. More than 9,000 nurses are employed in the hospitals of the society, and 600 others are at the disposition of the health service in the military hospitals. The society has made numerous gifts of linen and wool clothing for the hospitals or for the soldiers at the front. From Paris alone it has sent out over 100,000 such articles as blankets, shirts and socks. These various services have occasioned large expenditures amounting to 8,520,000 francs ($1,704,000) distributed as follows: hospitals, 6,840,000 francs; railway-station infirmaries, 980,000 francs; first-aid stations, 93,000 francs; canteens, 77,000 francs; automobile ambulances, 105,000 francs; gifts to hospitals and soldiers, 425,000 francs.

ASSISTANCE FOR CRIPPLES

For a long time there has been in France an Association pour l'assistance des mutilés pauvres. It was founded in 1868 to furnish needy cripples with assistance and employment. In view of the recent events which have increased the numbers of prospective beneficiaries, the society has addressed to the public and particularly to employers, merchants, manufacturers' bankers, etc., an appeal for report of employments which might be given to men incapacitated by war injuries.

BERLIN LETTER

BERLIN, Dec. 29, 1914.

Personal

Von Hansemann and F. Krause have been appointed regular salaried professors.

Professor Aschoff has been chosen rector of the University of Freiburg.

The War

SEXUAL PROBLEMS OF THE WAR

At the last meeting of the medical society for the study of sexual science, Dr. Burchard discussed the influence which the war has had and will have on sexual life. In the first place, it affects the conditions governing marriage; considerations of intelligence and of deliberation are put aside, and love triumphs over good sense in the matter of marriage. On the other hand, loose forms of sexual life, concubinage and temporary relations become less during the war, so that these forms of serious sexual urgency are suspended. (On the other hand, it is to be noted that according to the statistics of the Berlin statictical bureau, the cases of fatal peritonitis after apparently criminal abortion have fallen off remarkably since the outbreak of the war.) While prostitution is not so closely connected with war as it was in the middle ages, when crowds of prostitutes followed the army, yet the dangers both in foreign countries and at home are greater than in time of peace, since prophylactic medical control is beset with the greatest difficulties. It is the duty of physicians to determine the existence of disease in the members of the army as soon as possible, and to guard against it by instruction regarding the dangers of illegitimate intercourse and the measures of prevention. Moreover, we may be sure that prostitution serves the purpose of the spies to a large extent. Of no less importance are the mental diseases in the war which are related to the sexual life. The lecturer had seen many cures of sexual neurasthenia, especially such forms as are similar to traumatic neuroses, which also are improved in the field. Other questions of sexual science which will be stimulated by the war are eugenics and racial hygiene, and the determination of sex. The study of the latter has made such progress through animal experiment that it is to be hoped it will soon be carried far enough so that the great loss of males will be compensated for. The question was also raised as to what bearing these facts might have on insanity and crime.

CONSANGUINEOUS MARRIAGE

This address was followed by one by Dr. Crzellitzer on the biologic effects of the marriage of blood relatives. The question was treated from the point of view of animal experiments, which were continued through many generations by the repeated pairing of brother and sister animals, or of parents with their young. Experiments with all our domestic animals gave uniform results: At first the progeny showed no recognizable effect, but after ten or twenty generations there appeared a gradual diminution of strength of constitution, the animals became smaller, more slender, more sensitive and more lacking in constitutional vigor; finally fertility failed, so that these incestuous races perished. The various diseases described by certain breeders are not incontrovertible evidence of the effect of inbreeding between healthy individuals, for the results were not tested as carefully as we must demand at the present day on the basis of the Mendelian laws. The consanguineous marriages of human beings do not stand on the same plane as these breeding experiments, because they comprise only a single union between related germinal cells. The collective investigations by interested physicians with reference to presumably healthy consanguineous parents, as they have been conducted in North America, England and France, have given contradictory results.

The condition is quite different with the investigation of diseases which occur in the progeny of such marriages, so far as the disease was latent in the parents but was awakened by the consanguineous marriage. Such conditions are recognizable by the fact that these diseases appear in the progeny of the consanguineous marriage to a greater proportionate extent than in the population at large in the community to which the consanguineous groups belong. In this way the importance of consanguinity for the occurrence of idiocy, congenital deaf-mutism and certain eye diseases, particularly pigmentary degeneration of the cornea, has been established. Crzellitzer has kept for many years the family records of a number of families in which occurred a number of inherited or possibly inherited eye diseases. In about 850 of these, reliable data with reference to the blood relationship or the reverse of the parents were obtained, so that they are available for the purpose of the investigation. In two cases it seems that a connection between the disease and the consanguinity must exist, namely, extreme myopia and strabismus. The latter result is new and is adapted to throw light on the general heredity of strabismus. Still the problem of consanguinity is only a special phase of the general problem of heredity, and is probably an instance of the superior opportunity for the persons with mixed heredity to find in their own families partners with similar mixed heredity over that in the rest of the homozygotic population, that is, among persons of pure heredity. In an organism of mixed heredity, a disposition which we call recessive may remain latent for decades but come to light on pairing with another organism of the same tendency. Thus the Mendelian laws give the key to some of the obscure problems of the ages.

STUDENTS IN THE WAR

The extent to which the students of the combined student corporations of the Swabian national university at Tübingen are participating in the war is an example of the patriotism of the German students in this gigantic struggle of the German people. All the students of a number of the societies who are in the field as reservists or as volunteers in other cases have gone either as soldiers or as nurses, while of another large part only a few have remained behind. The 143 members of the Evangelistic theological seminary have furnished 123, the 142 Catholics 100 to military service and the former 9 to the medical service. Altogether, of the 2,069 German students at Tübingen last semester, 1,500 are at the front and several hundred are in the medical service, among them citizens of all states of the empire. These figures show in a most favorable light the readiness of our university youth to sacrifice themselves for the country. In 1870-1871, 3,200 of the 13,765 students at that time in the German universities joined the army, and 1,200 were in the medical service.

THE DRUG SUPPLY

We have no lack of medicines. For camphor, the importation of which from Japan has entirely ceased, we have been obliged to resort to the synthetic product. The scientific deputation for medical affairs has reported in reply to a request from the minister that there is no objection to the external application of synthetic camphor, but that clinical experience must first be collected before an opinion can be given with reference to the internal use of this product. Accordingly, the minister has ordered investigations to be made in the university clinics and large hospitals for a period of three months on the curative effect of synthetic camphor.

Marriages

LOUIS ASHLEY VAN KLEECK, M.D., Manhasset, N. Y., to Miss Grace Woodhull Van Nostrand of Little Neck, L. I., N. Y., January 16.

BERTRAND FRANCIS DRAKE, M.D., New Rochelle, N. Y., to Miss Jeannie Watson of Beechmont, N. Y., January 22.

ROMAN DAIGSE MARTINEZ, M.D., White Castle, La., to Miss Ruth Comeaux of Bayou Goula, La., November 18.

GILBERT VAN VRANKEN, M.D., Passaic, N. J., to Miss Rose Camwell of New York City, December 25.

DAVID N. WALTERS, M.D., Campbellsport, Wis., to Miss Lida A. Esser of Milwaukee, January 12.

WILLIAM H. TOWNE, M.D., Shiocton, Wis., to Miss Elsie Daniels of Seymour, Wis., December 29.

SIDNEY KOHN SIMON, M.D., to Miss Emma R. Dreyfous, both of New Orleans, December 17.

JOHN WILLIAM FOLEY, M.D., to Mrs. Anna Postel Kradwell, both of Denver, recently.

JOHN FERDINAND GOLDEN, M.D., to Miss Florence F. Lydon, both of Chicago, January 19.

HUBERT RAWISZER, M.D., to Miss Elizabeth Crowley, both of Omaha, Ga., January 20.

Deaths

Allison Maxwell, M.D. Miami Medical College, Cincinnati, 1876; a Fellow of the American Medical Association; for many years professor of diseases of the chest and clinical medicine of the Central College of Physicians and Surgeons, and dean of the Indiana Medical School, Indianapolis; a member of the Indianapolis State Board of Health for two terms; for three years a member and president of the Indianapolis Board of School Commissioners; prominent among insurance medical directors, and for several years medical director of the State Life Insurance Company, Indianapolis; died in the Methodist Hospital, Indianapolis, January 16, from embolism following a prostatectomy, aged 66.

Isaac Leopold, M.D. University of Pennsylvania, Philadelphia, 1886; a Fellow of the American Medical Association; ophthalmologist to the Jewish Hospital, Stetson Hospital and Kennington Hospital for Women, Philadelphia; medical director of the Jewish Maternity Hospital, Philadelphia, and Jewish Seaside Home for Invalids, Atlantic City, N. J.; ophthalmologist to and vice-president of the Philadelphia Jewish Sanatorium for Consumptives, Eagleville, Pa.; a prolific contributor to the literature of his specialty; died at his home in Philadelphia, January 18, from heart disease, aged 51.

Aaron Alonzo Noyes, M.D. College of Physicians and Surgeons, Keokuk, Ia., 1850; a member of the Iowa State Medical Society; one of the organizers of the Delaware County Medical Society, Cedar Valley Medical Society, Cerro Gordo Medical Society and Upper Cedar Valley Medical Society; in 1876 a member of the examining board of the Medical Department of the Iowa State University; for eighteen years local surgeon for the Iowa Central Railroad; for forty-five years a practitioner of Mason City, Ia.; died at the home of his niece in Wauwatosa, Wis., aged 92.

William Joseph Sheehan, M.D. Yale University, New Haven, Conn., 1895; a Fellow of the American Medical Association and a well known and beloved practitioner of New Haven, Conn.; one of the founders of St. Raphael's Hospital, New Haven; died in that institution, January 13, from septic pneumonia following an arthritis of the ankle, aged 43. Members of the New Haven Medical Association served as active and honorary pallbearers at the funeral of Dr. Sheehan, and the association, at a special meeting, January 14, adopted resolutions of appreciation and regret.

John Farmer Winn, M.D. University of Virginia, Charlottesville, 1875; a member of the Medical Society of Virginia; professor of clinical obstetrics in the University College of Medicine, Richmond; consulting obstetrician to the Seventeenth Street Infirmary and Brook Avenue Obstetrical Clinic, and obstetrician to the Virginia Hospital, Richmond; for several years editor of the *Richmond Journal of Practice;* died at his home in Richmond, January 14, from pneumonia, aged 62.

Enoch Matthew Anderson, M.D. Rush Medical College, 1895; a Fellow of the American Medical Association and a well known specialist on diseases of the eye, ear, nose and throat of Spokane, Wash.; for several years in charge of the Sumpter (Ore.) General Hospital; first lieutenant and assistant surgeon of Oregon volunteers during the Spanish-American War, with service in the Philippines; died in the Deaconess Hospital, Spokane, January 11, from cerebral hemorrhage, aged 40.

Hunter Holmes Powell, M.D. Medical College of Virginia, Richmond, 1867; a Fellow of the American Medical Association; professor of obstetrics and pediatrics in the Western Reserve University, Cleveland; a member of the visiting staff of Lakeside Hospital, Cleveland, and of the consulting staff of the Cleveland City Hospital; director of St. Ann's Maternity and Orphan Asylum; president of the Municipal Milk Commission; died at his home in Cleveland, January 9, aged 71.

G. Henri Desjardins, M.D. University of the Victoria College, Coburg, Ont., 1871; was one of the founders of the Nazareth Institute for the Blind, Montreal; formerly a Papal Zouave and later a practitioner and ophthalmologist of Boston and Montreal; at one time a member of the faculty of his Alma Mater; died at the home of his sister in Montreal, January 9, aged 66.

George Allen Nash, M.D. St. Joseph Hospital Medical College, St. Joseph, Mo., 1879; a Fellow of the American Medical Association and one of the oldest practitioners of Maryville, Mo.; one of the founders of and chief surgeon to St. Francis' Hospital, Maryville; local surgeon at Maryville for the Wabash and Burlington System; died in St. Francis' Hospital, January 8, from carcinoma of the pancreas, for which operation had been performed, December 17, aged 66.

Henry Bezou, M.D. Tulane University, New Orleans, 1871; one of the leaders in the overthrow of the Kellogg government in 1874; for two terms a member of the Louisiana State Board of Health and coroner of Orleans Parish; one of the founders of the New Orleans Eye, Ear, Nose and Throat Hospital; died at the home of his daughter in New Orleans, January 10.

Charles Bowman, M.D. University of Pennsylvania, Philadelphia, 1849; in charge of an Army general hospital at New Albany, Ind., during the Civil War; one of the oldest practitioners of southern Indiana and for many years a member of the Floyd County Medical Society; died at his home, January 12, from influenza, aged 89.

James Albert Rowan, M.D. Tulane University, New Orleans, 1873; a member of the Mississippi State Medical Association and once president of the Copiah County Medical Society; one of the best known practitioners of South Mississippi; died at his home in Wesson, January 8, from cerebral hemorrhage, aged 62.

George Dodge Rowe, M.D. Medical School of Maine, Brunswick, 1868; a member of the Iowa State Medical Society; for many years a practitioner of Boone, Ia.; died in Hot Springs, Ark., January 13, from malignant disease of the bladder and intestine, eight days after a surgical operation, aged 69.

Walter W. Williams, M.D. Michigan College of Medicine and Surgery, Detroit, 1897; a member of the Michigan State Medical Society; from 1887 to 1890 a member of the house of representatives from Bay County; died at his home in Bay City, January 9, from nephritis, aged 67.

Charles Smith, M.D. Long Island College Hospital, Brooklyn, 1890; a Fellow of the American Medical Association; from 1900 to 1903 United States vice consul at Puerto Cortez, Honduras; died at his home in Riverside, Conn., January 8, from heart disease, aged 46.

Walter DeWitt Boggs, M.D. Long Island College Hospital, Brooklyn, 1910; instructor in physical diagnosis in his Alma Mater for a year; a specialist in pathology and pediatrics of Pasadena, Cal.; died at his home in Altadena, Cal., January 5, aged 32.

Charlotte W. Ford, M.D. Woman's Medical College of the New York Infirmary for Women and Children, New York City, 1873; for many years a practitioner of New York City; died at her home near Morristown, N. J., January 9, from heart disease.

Henry Walton Wood, M.D. University of Maryland, Baltimore, 1902; of Boston and New Bedford, Mass.; a Fellow of the American Medical Association and a specialist in mental diseases; died in Jefferson Hospital, Philadelphia, January 12, aged 35.

Lewis C. Hammond, M.D. Michigan College of Medicine, Detroit, 1883; health officer of Bay City, Mich., in 1910; a practitioner of Clarkston, Mich.; died January 12, from heart disease while making a professional call in Clarkston, aged 59.

Emery G. Jones, M.D. Jefferson Medical College, 1884; a retired practitioner of Wilkinsburg, Pa.; was found dead at his home in that city, January 6, from the result of a gunshot wound, believed to have been self-inflicted with suicidal intent, aged 55.

Silas W. Newman, M.D. Physio-Medical College of Medicine and Surgery, Chicago, 1888; school director and for several years president of the Board of Health of Scottdale, Pa.; died at his home, December 28, from carcinoma of the stomach, aged 61.

Diederick A. Schumacher, M.D. Wisconsin College of Physicians and Surgeons, Milwaukee, 1898; Rush Medical College, 1900; formerly health officer of Aberdeen, Wash.; died at his home in that city, December 28, from pulmonary abscess, aged 56.

Marshall William Harner, M.D. College of Physicians and Surgeons, Chicago, 1905; a Fellow of the American Medical Association; of Clay Center, Kan.; died December 4, from shock following an operation for intestinal obstruction, aged 39.

Thomas L. Thompson, M.D. Long Island College Hospital, Brooklyn, 1879; formerly a member of the Indiana State

Medical Association and a practitioner of Indianapolis; died at his home in South Pasadena, Cal., December 28, aged 59.

James O. Siddons (license years of practice, Indiana, 1897) surgeon of volunteers during the Civil War; for many years a practitioner of Brazil and Marion, Ind.; died at his home in that latter city, January 9, from senile debility, aged 78.

Dudley Ragland Boston, M.D. University of Virginia, Charlottesville, 1854; formerly a member of the general assembly of Virginia from Fluvanna County; died at his home in Crofton, Va., January 15, from pneumonia, aged 82.

Joseph Piersol, M.D. Western Pennsylvania Medical College, Pittsburgh, 1890; a member of the Ohio State Medical Association; a practitioner and druggist of Bellaire; died suddenly in that city, January 1, from heart disease, aged 57.

Burt Lynn Wilson, M.D. New York University, New York City, 1897; Cornell University, New York City, 1899; of Erie, Pa.; was found dead in his room in a hotel in Cambridge Springs, Pa., January 6, from heart disease, aged 43.

James A. Duncan, M.D. Bellevue Hospital Medical College, 1865; a member of the Medical Society of the State of Pennsylvania and for nearly half a century a practitioner of Pittsburgh; died at his home in that city, December 29, aged 74.

Diedrich A. Brumund, M.D. Northwestern University Medical School, Chicago, 1900; also a graduate in pharmacy; until three years ago a practitioner of Chicago; died suddenly at his home in St. Stephen, N. B., January 1, aged 40.

Leonard Decker Henderson, M.D. New York University, New York City, 1889; of Hillsdale, N. Y.; coroner of Columbia County; died at the home of his father in Austerlitz, N. Y., November 24, from heart disease, aged 49.

Rosemond Luella Hathaway, M.D. University of Michigan, Ann Arbor, 1893; formerly a Fellow of the American Medical Association; died at her home in East Liverpool, Ohio, January 1, from cerebral hemorrhage, aged 51.

James Monroe Jackson, M.D. Medical College of the State of South Carolina, Charleston, 1849; a surgeon in the Confederate service throughout the Civil War; died at his home in Guntersville, Ala., December 28, aged 89.

James N. Gray, M.D. Memphis Hospital Medical College, Memphis, Tenn., 1892; a member of the Tennessee State Medical Association; died at his home in Huntington, December 30, from cerebral hemorrhage, aged 47.

Noah H. Lehman, M.D. Eclectic Medical Institute, Cincinnati, 1877; of Sterling, Ill.; who started South December 24, in the hope of regaining his health; died at Stanford, N. C., December 29, from asthma, aged 64.

Robert Reuben Brady, M.D. Jefferson Medical College, 1865; a member of the Kentucky senate from the ninth district from 1904 to 1908; died at his home near Trenton, Ky., December 30, from heart disease, aged 72.

Albert William Bell, M.D. University of Toronto, Ont., 1891; formerly manager and secretary of the board of directors of the Canadian Industrial Exhibition; died at his home in Winnipeg, Man., October 7, aged 52.

Delmar Louis Casselman, M.D. Bellevue Hospital Medical College, 1873; formerly of Purdy Station, N. Y., but for seven years a resident of Los Angeles; died at his home in Ocean Park, Cal., January 11, aged 62.

Ray James McMurray, M.D. College of Physicians and Surgeons, Chicago, 1906; a member of the Florida Medical Association; of Mulberry, Fla.; died at Bartow, Fla., December 12, from typhoid fever, aged 31.

Albert Carter Smith, M.D. University of Tennessee, Nashville, 1914; an intern in the Erlanger Hospital, Chattanooga, Tenn.; died in that institution, December 30, after an operation for appendicitis, aged 25.

Edwin R. Kinnebrew, M.D. Atlanta (Ga.) Medical College, 1884; formerly a physician and druggist of Athens, Ga.; died at his home in Franklin, N. C., December 14, from chronic nephritis, aged 66.

Horace Rennie Powell, M.D. Albany (N. Y.) Medical College, 1882; a member of the Medical Society of the State of New York; died suddenly at his home in Poughkeepsie, N. Y., January 2, aged 54.

Fred Robert Boyd, M.D. University of Wooster, Cleveland, 1885; formerly a Fellow of the American Medical Association; died at his home in St. Louis, January 2, from cerebral hemorrhage, aged 63.

Query Monterey Turner, M.D. University of Nashville, Tenn., 1873; died at his home in Adairville, Ky., December 31, from carcinoma, ten months after an operation on the prostate gland, aged 67.

Peter Manson, M.D. University of Michigan, Ann Arbor, 1870; a Fellow of the American Medical Association; died at his home in Fresno, Cal., December 29, from cerebral hemorrhage, aged 69.

Isaac S. Robinson, M.D. Medico-Chirurgical College of Philadelphia, 1887; formerly of Columbus and Toledo, Ohio; died at the home of his brother in Seattle, Wash., December 30, aged 59.

Harry Gates Bullard, M.D. Dartmouth Medical School, Hanover, N. H., 1891; a member of the Vermont State Medical Society; died at his home in St. Johnsbury, Vt., January 3, aged 48.

C. W. Russell, M.D. Independent Medical College, Chicago; of Chicago; also a clergyman; died at the home of his niece in Laurens, Ia., from carcinoma of the stomach, aged 72.

Edwin Edward Koehler, M.D. Niagara University, Buffalo, 1894; a member of the Medical Society of the State of New York; died at his home in Buffalo, January 2, aged 44.

Frank N. Barker, M.D. University of Vermont, Burlington, 1885; a Fellow of the American Medical Association; died at his home in Norway, Maine, December 11, aged 60.

William King Haviland, M.D. University of Oregon, Portland, 1902; former mayor of Estacada, Ore.; died at his home in that city, December 31, from pneumonia, aged 44.

Josephus Foreman, M.D. Eclectic Medical Institute, Cincinnati, 1868; for many years a resident of Patterson, Ill.; died at his home in that place, December 24, aged 70.

Henry K. Bearden, M.D. University of the South, Sewanee, Tenn., 1901; formerly of East Chattanooga, Tenn.; died at his home in Knoxville, Tenn., December 27, aged 37.

Emma L. Billstein, M.D. Woman's Medical College of Pennsylvania, Philadelphia, 1893; formerly of Highlands, N. C.; died at her home in Baltimore, December 20.

James Stott Shaw, M.D. Boston University, 1876; formerly a dentist; assistant in his Alma Mater; died at his home in Beachmont, Revere, Mass., January 1, aged 76.

John D. Cronmiller, M.D. University of Maryland, Baltimore, 1857; of Laurel, Md.; died in the University of Maryland Hospital, Baltimore, December 31, aged 82.

Richard Lilly Bye, M.D. University of Minnesota, Minneapolis, 1912; of Clinton, Minn.; died at the home of his parents in Lily, Minn., December 16, aged 29.

William Francis Haynes, M.D. Bellevue Hospital Medical College, 1876; a practitioner and druggist of Lindsey, Okla.; died suddenly, December 18, aged 66.

Lorenzo E. Brayman, M.D. Western Reserve University, Cleveland, 1869; died at his home in Pierpont, Ohio, January 3, from heart disease, aged 71.

Fred Van Magness (license, Massachusetts, 1904) of Chelsea, Mass.; died in Everett, Mass., November 30, from lobar pneumonia, aged 34.

Benedict A. Weeks, M.D. Geneva (N. Y.) Medical College, 1861; of Blue Stores, N. Y.; died at his home, December 20, from pneumonia, aged 78.

William Perry Russell, M.D. New York University, New York City, 1885; died at his home in Niagara Falls, N. Y., December 30, aged 53.

W. S. Sanders, M.D. Louisville (Ky.) Medical College, 1875; died at his home in Greenwood, Miss., September 18, from anemia, aged 60.

Herschel G. Thomas, M.D. University of the South, Sewanee, Tenn., 1899; died at his home in Handley, Tex., January 1, aged 53.

John Parker (license, Indiana, 1899) for twenty-five years a practitioner of Mellot, Ind.; died at his home in that place, December 26.

Charles Hodge Bailey, M.D. University of Michigan, Ann Arbor, 1908; died at his home in Montague, Mich., from nephritis, aged 33.

Charles Henry Flynn, M.D. Keokuk (Ia.) Medical College, 1891; died at his home in Postville, Ia., December 30, aged 56.

Robert T. Hodgen, M.D. University of Louisville, Ky., 1859; died at his home in Lebanon, Ky., January 2, aged 76.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

DR. PEEBLES INSTITUTE OF HEALTH

A Fraudulent and Dangerous "Cure" for Epilepsy

Peebles' epilepsy cure is put out by the Dr. Peebles' Institute of Health, Ltd., Battle Creek, Mich. This company has for its chairman, J. M. Peebles, M.D., and for its treasurer and general manager, W. T. Bobo, M.D.

J. M. Peebles, according to our records, is over 92 years old, and holds a diploma, received in 1876—after he was 50—from the Philadelphia University of Medicine and Surgery, that was fraudulent when it became extinct in 1880. Peebles has held forth at Hammonton, N. J.; San Antonio, Tex.; San Diego, Cal.; Battle Creek, Mich., and is at present at Los Angeles. In addition to quacking it in the "epilepsy cure" line, Peebles supplements his income by selling a book, "Vaccination, a Curse and a Menace to Personal Liberty"—price One Dollar.

FITS
RIGHT REMEDY is FOUND AT LAST
LET US PROVE IT
2.50 WORTH FREE
If you suffer from Fits or Falling and Nervous spells of any kind let us send you a good LIBERAL trial treatment of our wonderful Brain and Nerve Restoratives.
Hundreds rejoicing over permanent relief from this FREE TRIAL TREATMENT alone, and we want to prove its wonderful efficiency to every sufferer. No matter how serious your case, or who has failed to cure you, there is hope for you in this treatment. Write today for the FREE TRIAL TREATMENT and let the Remedies speak for themselves. Address Dr. Peebles Institute, Battle Creek, Mich., 350 Madison St.
LXN

A reproduction (reduced) of an advertisement of the Peebles Institute that sells a fraudulent epilepsy "cure." Its treasurer and general manager, W. T. Bobo, also advertises a "goitre cure."

A typical advertisement (reduced) of Bobo in his rôle of goiter curer.

W. T. Bobo, M.D., the treasurer and general manager of the Peebles Institute was, according to our records, graduated in 1899 by the Marion-Sims College of Medicine, St. Louis. Bobo not only has an interest in this fraudulent concern but also advertises a goiter "cure." Altogether the personnel of the Peebles Institute is strictly in keeping with its business.

The Peebles Institute reaches its victims in the usual manner: advertisements in not-to-particular newspapers and magazines. A "free trial treatment" and a booklet containing much "scare" material forms part of the bait. Pictures showing a man followed by a demon (epilepsy)—a victim of the disease falling from a housetop—the horribly distorted features of an epileptic in an attack—a madman raving in his cell as a result of epilepsy—thus does the Peebles Institute drum up trade for its disreputable business.

In common with practically all "epilepsy cures" the Peebles Institute leads the public to believe that it does not use those drugs commonly prescribed by physicians in such cases. Also in common with its kind, the concern does actually use bromids. It is not very long ago that the Peebles Institute in circular letters sent to prospective victims directly falsified regarding the substances used. Thus:

"We could have done what many 'FIT SPECIALISTS' do, and sent a sedative or bromid mixture that would have deadened and partly paralyzed the brain and nervous system and checked the spells while the remedies were being used, but we do not treat our patients in that way."

The Peebles Institute no longer makes such false statements—directly. It does, however, still make such claims by inference. The fact that the concern now uses more guarded language may be due to the government's successful prosecution of the Peebles epilepsy cure in which the stuff was declared misbranded, and the company fined!

A specimen of the Peebles nostrum—price Five Dollars—was purchased direct from the concern and the preparation submitted to the Chemical Laboratory of the American Medical Association for examination:

CHEMISTS' REPORT[1]

The "Peebles Epilepsy Treatment," manufactured by the Peebles Health Institute, Battle Creek, Mich., was submitted to the Chemical Laboratory for examination. The treatment consisted of two original bottles, labeled, respectively, No. 1 and No. 2.

Peebles Epilepsy Treatment No. 1.—The bottle of "Peebles Epilepsy Treatment No. 1" contained 350 c.c. (12 fluidounces) of a brown liquid with extractive matter present and had an odor resembling celery and valerian. The liquid seemed to consist mainly of a hydro-alcoholic solution of extractives with flavoring.

Peebles epilepsy cure. Peebles received his diploma from a low grade medical school (now extinct) after he was fifty years old. In addition to being president of a fraudulent "epilepsy-cure" concern, he sells a book opposing vaccination.

The specific gravity at 15.6 C. was 1.1040. The solid residue weighed 29.4 per cent. and the ash weighed 1.17 per cent. Quantitative determination showed 11.40 per cent. absolute alcohol by volume. The dose is 1 teaspoonful at mealtime.

Peebles Epilepsy Treatment No. 2.—The bottle of "Peebles Epilepsy Treatment No. 2" contained about 350 c.c. (12 fluidounces) of a brown liquid, having extractive matter present and a valerian-like odor. The specific gravity at 15.6 C. was 1.1601. Qualitative tests demonstrated the presence of alcohol, ammonium, potassium, sodium (traces), bromid and chlorid. Quantitative determinations yielded the following:

Alcohol (by volume)	8.44 per cent.
Ammonia (NH_4) (by weight)	1.09 per cent.
Potassium (K^+) (by weight)	5.06 per cent.
Sodium (Na^+) (by weight)	0.01 per cent.
Bromide (Br^-) (by weight)	15.18 per cent.
Chloride (Cl^-) (by weight)	0.03 per cent.

Essentially, each 100 c.c. of the solution contains 7.3 grams of ammonium bromid and 17.9 grams of potassium bromid.

1. This is a condensed report of the chemists' findings. The details of analysis will appear in the Reports of the Chemical Laboratory of the American Medical Association for 1914.

Calculating from the bromid determination, each dose, one teaspoonful (1 fluidram), contains the equivalent of 16.8 grains of potassium bromid, and each daily dose (three teaspoonfuls) corresponds to 50.4 grains of potassium bromid.

The report shows, as might have been expected, that the Peebles epilepsy treatment consists, essentially, in giving bromids. The use of bromids in the treatment of epilepsy has been known for years. The bromid treatment is not in any sense of the word a cure; it is at best but palliative. The drug, acting as a sedative, tends to suppress the attack but should be used with the greatest circumspection and care. There is no justification for selling to epileptics, bromid-containing nostrums bearing no hint of the presence of such drugs and without warning of their powerful and dangerous character. The indiscriminate use of bromids is dangerous. The results that may follow their long continued use has been thus described:

"In other cases evidences of mental aberration develops, the patient becoming irritable, morose and even homicidal. Sometimes, however, we find melancholy and hallucinations, and, rarely, exalted ideas. In still others a dangerous suffocative bronchitis develops, the patient may become profoundly cachectic, or the condition may resemble typhoid fever."

RADIO-REM

A correspondent sends to THE JOURNAL an advertisement of the Radio-Rem outfit (Schieffelin and Co.), which according to the advertisements, consists of a box containing eight glass stoppered bottles and an equal number of rods coated with radium sulphate. If the bottles are filled with water and the rod inserted and left to stand a certain time, the water is said to become charged with radium emanation. The claim is made that effects similar to those obtained at mineral springs are produced by drinking this "radio-active" water.

In view of the experimental and unsettled status of the use of radium in internal medicine, THE JOURNAL cannot express an opinion as to its value. Certainly convincing evidence of its utility has not been advanced.

The emanation in sufficient dosage is capable of producing marked effects on the animal organism. It is admitted, even by the strongest advocates of such treatment, (Bickel: Moderne Radium und Thorium Therapie, p. 31) that in no case is there an action on the cause of the disease. The largest class of diseases in which radium emanation has gained a reputation includes the various forms of arthritis, myalgia, neuralgia, etc. Improvement has been noted, but there are so many influences involved, especially in the class of diseases represented by the general term rheumatism, that a definite judgment is very difficult to form (see editorial THE JOURNAL, Jan. 17, 1914, p. 209). Newcomet says: "But as most of the diseases in which they (the radio-active elements) have been employed belong to a class for which certain forms of treatment have been periodically promulgated to be used for a short time, and finally be forgotten, more proof must be given of their efficiency before they can be universally adopted." (Radium and Radiotherapy, p. 288). The use of radium emanation must therefore be regarded as in the experimental stage.

Bearing in mind the very doubtful value of radium in internal medicine, the questions arise: (1) Does this apparatus give a solution of radium emanation? (2) Is the quantity of emanation sufficient to be of any value?

1. It is quite possible that the rod coated with radium sulphate may produce the amount of radium emanation claimed, but as the general practitioner is not equipped to measure the amount of radium on the stick, or the emanation in the water, he must accept the manufacturer's claim.

2. The value of radium emanation in any given condition is presumably dependent on the use of a proper dosage. Because arsenic in milligram doses is an effective remedy it does not follow that the thousandth part of a milligram will produce any effect. The dosage of radium emanation is measured usually in Mache units. Those who employ this form of treatment regard 3,000 to 5,000 Mache units as the beginning daily dose, to be increased at the end of a week if a reaction is not experienced. A dosage below this amount is not likely to be of any service. The dosage provided by the outfit described above is said to be only 100 Mache units, an amount which is probably inadequate. It should be remembered that radium produces different effects when small doses are given at intervals than it does when the total amount is given in one dose.

It is claimed that by the use of this outfit a substitute for natural mineral water may be supplied. One of the puzzling things about mineral waters is that when drunk at the spring they seem to have a different effect from that which they produce when bottled. Formerly this difference was explained by the assumption that rest, environment, regular habits and climate played a large part, but since the discovery of radium there is a tendency to attribute it to a loss of radio-activity in the bottled waters. Some natural springs, are, to be sure, markedly radio-active. Other springs to which empiricism has attributed equal therapeutic powers do not possess any exceptional radio-activity. There is moreover no convincing proof that radio-activity in mineral waters has any value. The proposition to make a mineral spring by placing a radium-bearing stick in a glass of water is another appeal to the belief in the mysterious.

ARTICLES REFUSED RECOGNITION

Reports of the Council on Pharmacy and Chemistry

Below appear abstracts of the Council's action on articles refused recognition which were not deemed of sufficient importance to require a lengthy report. Articles with the titles starred will be printed in full in the Reports of the Council on Pharmacy and Chemistry for 1914. A reprint of any of these unabridged reports will be sent on receipt of a two cent stamp. Previous instalments of abstracts appeared in THE JOURNAL, Nov. 14 and 21, Dec. 12, 1914, and Jan. 2, 1915.

G. G. Phenoleum Disinfectant

This material is a solution sold by the G. G. Chemical Company, Inc., of New York and claimed to be composed of the following ingredients:

". . . Volatile Hydrocarbons, Phenols, Resin Acids, Sodium Oxide and Heavy Hydrocarbons."

For it they claim the following properties:

"PREVENTS DISEASES, KILLS SEWER GAS, PURIFIES THE TOILET."

"For any skin disease, 'tis as good for man as for beast."

As to its virtues as a disinfectant the manufacturers claim a phenol coefficient of 5 or 6. The disinfecting power is not however stated on the label as required by the Council for phenol disinfectants. Disregarding entirely the fact that disinfectants are available with a much higher phenol coefficient than the one claimed for this product, the statement is made that it is

". . . the most powerful disinfectant known."

As such claims are self-evidently unwarranted, G. G. Phenoleum Disinfectant was refused recognition.

Phytin—Fortossan

Phytin manufactured by the Society of Chemical Industry, Basle, Switzerland, and sold by A. Klipstein and Co., is an organic phosphorus compound said to be the "Acid Calcium-Magnesium Salt of Phytinic Acid (Inosit Phosphoric Acid or Anhydro-Oxymethylene-Diphosphoric Acid)" obtained from cereals and legumes.

The trade package of Phytin constitutes an indirect advertisement to the public.

The Council rejected Phytin because unwarranted and exaggerated therapeutic claims are made for this product based on the entirely undemonstrated assumptions: (1) that phosphorus is assimilated only from organic combinations (it is even implied that this must be in the form of Phytin, and that milk is incapable of supplying the phosphorus needs of infants); (2) that a long list of diseases, ranging from rickets to hysteria, are due to deranged phosphorus metabolism; (3) that all these diseases are cured or markedly benefited by Phytin.

In brief, the claims rehearse every point of the more or less discredited phosphorus propaganda, in exactly the same way as it was rehearsed successively by the exploiters of

hypophosphites, lecithin, glycerophosphates, and amorphous phosphorus. It is conceded by the writers of the advertising pamphlets for Phytin that the preceding claims were erroneous; but no evidence is given to warrant the belief that the Phytin claims are less erroneous.

The misleading statements are most extreme. By the use of bold type particular stress is laid on the preposterous and vicious claim that Phytin

"radically and permanently removes sexual debility."

Fortossan is a preparation of Phytin and sugar of milk, also manufactured by the Society of Chemical Industry, Basle, Switzerland, and sold by A. Klipstein and Co. Since Fortossan is a simple preparation of Phytin the Council voted that the rejection of Phytin should also apply to Fortossan.

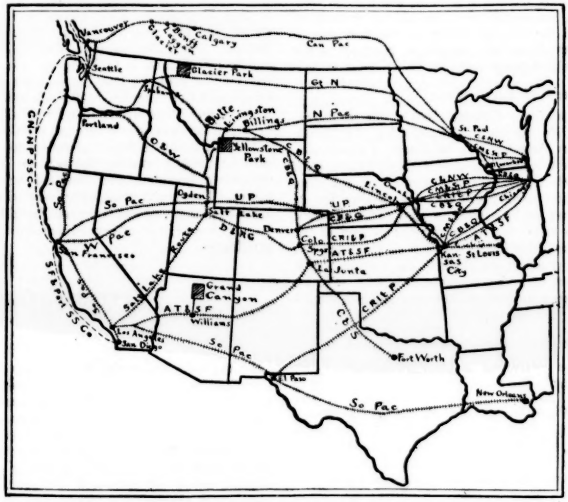
Association News

THE SAN FRANCISCO SESSION

Suggestions as to Railroad Routes Which May Be Used in Making the Trip

Preparations for the annual session of the American Medical Association, to be held in San Francisco, June 21-28, are under way. The several routes to San Francisco are here outlined briefly, in order that Fellows may have information to guide them in planning the trip. Travel from the East to the Pacific Coast passes in the main through three "gateways"—Chicago, St. Louis and New Orleans. In other words, eastern trunk lines carry passengers to Chicago, St. Louis or New Orleans and from these points, other railroad systems take them to the Pacific Coatst.

These western routes can be grouped roughly, according to the point at which they cross the Rocky Mountains, into the northern (the extreme northern one going through Canada), the central and the southern routes. Each has its attractions.



Outline map, showing some of the railroad routes to San Francisco and giving their general direction.

FROM EASTERN POINTS

From the New England States, the shorter route is through Chicago; but if the number of miles traveled and the time do not have to be too carefully considered, the trip may be southward, through New York, Philadelphia and Washington to New Orleans. From the Middle Atlantic and East Central States the more direct routings are by way of either Chicago or St. Louis, but the New Orleans gateway merits consideration, especially from the eastern section of this territory. From the South Atlantic States, New Orleans and St. Louis are the nearer gateways, but excellent trains place Chicago at the service of those from this territory.

THROUGH CHICAGO

The six railroad terminals in Chicago are here listed, beginning with the one located to the extreme southeast of the group, the several lines using the different stations being noted. (Roads coming into the city from the east and south are in roman, those going west are in italic type.)

1. Central Station, Twelfth Street and Lake Front: Illinois Central Railroad (*also operates a line west to Omaha*); and New York Central Lines, Big Four Route and Michigan Central Railroad.

2. Dearborn Station (also known as Polk Street Station), Dearborn and Polk Streets: *Atchison, Topeka and Santa Fe Railway;* Chesapeake and Ohio Railway; Chicago and Eastern Illinois Railroad; Erie Railroad; Grand Trunk Railway; Monon Route, and Wabash Railroad (*also operates lines to Omaha and to Kansas City*).

3. LaSalle Street Station, LaSalle and Van Buren Streets: The New York Central Lines, the Lake Shore and Michigan Southern Railway, and *Rock Island Lines.*

4. Grand Central Depot, Fifth Avenue and Harrison Street: Baltimore and Ohio Railroad; *Chicago Great Western; Minneapolis, St. Paul and Sault Ste. Marie Railway,* and Pere Marquette Railroad.

5. Union Passenger Station, Canal and Adams Streets: *Burlington Route; Chicago and Alton Railroad; Chicago, Milwaukee and St. Paul Railway* and Pennsylvania Lines.

6. Chicago and Northwestern Passenger Terminal, Madison and Canal Streets: *Chicago and Northwestern Railroad.*

THE NORTHERN ROUTES

From Chicago, for one of the northern transcontinental routes, the next central railroad point is St. Paul or Minneapolis. The principal lines to be considered are the Burlington; the Chicago and Northwestern; the Chicago, Milwaukee and St. Paul (this road operates a line to Seattle); the Great Western; the Rock Island, and the Minneapolis, St. Paul and Sault Ste. Marie.

From St. Paul and Minneapolis, the Canadian Pacific Route is through Minnesota, the Dakotas and the southern portion of western Canada. Its magnificent scenic attractions have made this line justly popular. The chief points of interest are at Banff, Laggan, Field and Glacier. At each of these points, the railroad company conducts a well-appointed hostelry for the convenience of sightseers. There are additional comfortable hotels provided along the route, so that it is possible to arrange an itinerary which will permit seeing the entire Canadian Rockies along this route by daylight travel.

The Great Northern route may be taken at St. Paul or directly from Chicago, as already noted. This road goes through the great wheat growing districts of Minnesota and the Dakotas, and through Montana, Idaho and Washington. The special scenic attraction of this railroad is that it provides access to Glacier National Park, a tour of which ordinarily occupies about five days.

Or, the Northern Pacific route may be selected from St. Paul and Minneapolis, with a view of visiting Yellowstone National Park. Its course is very similar to that of the

Great Northern through wheat country, "bad lands" and Rocky Mountain passes.

All these northern routes center at Seattle or Tacoma, from which points the Shasta route to San Francisco may be taken, or the final portion of the trip to San Francisco may be by boat.

THE CENTRAL ROUTES

Central lines from Chicago are over the Chicago and Northwestern to Omaha, then via the Union Pacific through Cheyenne and Ogden, and the Southern Pacific to San Francisco. This is the most direct of all routes available, and the trip can be made in about ten hours less time than over any other lines. The special trains making this fast time are extra-fare trains.

Other central routes are via the Burlington to Denver, or the Chicago, Rock Island and Pacific to Colorado Springs. These lines pass through the great corn belt—Illinois, Iowa, Nebraska and Kansas. Thirty-six hours may profitably be employed in and around Denver and Colorado Springs, visits being made to Pike's Peak, the Garden of the Gods, Manitou and other neighboring points of interest. By arranging to leave Denver in the late evening so as to pass through Colorado Springs about 4 o'clock in the morning, over the Denver and Rio Grande, one may see the wonders of the Royal Gorge early during the following day, arriving at Glenwood Springs in the late afternoon and Salt Lake City the morning following. Salt Lake City merits a stop of at least three or four hours. By leaving this point about noon over the Western Pacific, one may enjoy the superb scenery of the grand canyon of the Feather River on the last day of the journey, and San Francisco should be reached in the late afternoon or early evening.

THE SOUTHERN ROUTE

The southern route from Chicago is via the Atchison, Topeka and Santa Fe through Kansas City, La Junta, Albuquerque and Los Angeles. At Williams, a short side trip permits of a visit to the wonderful Grand Canyon of the Colorado. A well-appointed hotel, located on the edge of the Grand Canyon, permits the traveler to stay for as long or as short a time as he desires to view these wonders. Those who desire to make the trip down the canyon to the river will have to reach the Grand Canyon so that they can start down the trail by about 9 o'clock in the morning, as it takes the greater part of a day to make this trip. Parties may make arrangements to drive to different points of interest along the rim of the Canyon.

THE ST. LOUIS GATEWAY

At St. Louis all the railroads use the same station: Baltimore and Ohio Railroad; Big Four Route; *Burlington Route; Chicago and Alton Railroad;* Chicago and Eastern Illinois Railroad; *Chicago Rock Island and Pacific Lines; Frisco Lines;* Illinois Central Railroad; Louisville and Nashville Railroad; Louisville, Henderson and St. Louis Railway; *Missouri, Kansas and Texas Railway; Missouri Pacific Railway;* Mobile and Ohio Railroad; Pennsylvania Lines; *St. Louis, Iron Mountain and Southern Railway; St. Louis Southwestern Railway;* Southern Railway; Toledo, St. Louis and Western Railroad, and The Wabash Railroad (*also operates line west to Omaha and to Kansas City*). The central and southern routes noted above are the more available to those who use this gateway, connections therewith being made at Kansas City or Omaha.

NEW ORLEANS ROUTINGS

From New Orleans the direct route is over the Southern Pacific, which skirts the southern border of Texas, New Mexico and Arizona, passes through Los Angeles and goes up the west coast of California to San Francisco.

RAILROAD AND PULLMAN FARES

The following railroad fares have been announced to San Francisco and return: via direct routes from Chicago, $62.50; from St. Louis or New Orleans, $57.50; one way (not both) via Portland, Ore., Seattle, Wash., or Victoria, B. C., from Chicago, $80; from St. Louis, $75; from New Orleans, $83.75. Rates from eastern territory to these three gateways will be announced later.

The cost of Pullman service to San Francisco can be estimated from the following rates from the points mentioned. These are for space in regular line cars for a continuous trip and do not cover service in special cars or trains where stopovers are to be made at points en route to San Francisco.

Pullman rates from the following principal cities are:

PULLMAN RATES TO SAN FRANCISCO

From	Drawing Room	Compartment	Section		Tourist	
			Upper	Lower	Upper	Lower
Boston	65.00	52.00	14.80	18.50	7.80	9.75
New York	63.00	50.50	14.40	18.00	*	*
Washington, D. C.	62.00	49.00	14.00	17.50	....	9.00
Chicago	46.00	36.50	10.40	13.00	5.60	7.00
St. Louis	44.00	35.00	10.00	12.50	5.20	6.50
New Orleans	41.00	32.50	9.20	11.50	4.60	5.75

* No Tourist.

BY WATER ROUTES

In addition to these all-rail routes, part or all of the trip may be made by water. From points on the Atlantic Coast, boats sail to New Orleans, and then through the Panama Canal or directly through the canal and up the Pacific Coast to San Francisco. This all-water route takes about two weeks, and the rates vary in accordance with the accommodations; first cabin passage, one way, between New York and San Francisco, is $125 and up. On the Pacific Coast, the trip may be made by boat between the following points: San Diego and Los Angeles, San Francisco, Portland, Seattle or Tacoma and Vancouver. Boats may also be taken at Buffalo or any of the lake points through the Great Lakes to Chicago.

The foregoing is intended rather to suggest routes which may be used in making the trip to San Francisco than to present a complete and detailed announcement of these routes. Those who contemplate the trip should consult their local passenger agents, who will be able to give them exact information regarding routes, schedules, rates and stop-over privileges.

Correspondence

Flight of Mosquitoes

To the Editor:—In the article "Prevention is Greater than Cure," in the section headed "Mosquito Pest" (THE JOURNAL, Oct. 17, 1914, p. 1392) the categorical statement is made: "Mosquitoes, unless wind-blown, travel only a few hundred yards from their source of breeding." This is incorrect. Numerous studies by many observers have conclusively shown that many species, including such proved disease carriers as *A. albimanus, C. fatigans,* and *A. argyritarsis,* travel very considerably more than "a few hundred yards," unless by "a few hundred yards" the author intends to cover 1,000 to 2,000 yards. Also, at least certain species, and among these the *A. albimanus,* travel by preference *against* a mild breeze, one not exceeding a velocity of 4 miles per hour. The supposition of mosquitoes being "blown by wind" is open to serious doubt. It is more than likely that they travel during the calm immediately following a blow. In experimental work carried on in Panama, anopheles were invariably caught in larger numbers in the traps set on the lee sides of houses.

"These salt-water mosquitoes do not carry disease."

A. albimanus and *argyritarsis* breed in salt water under certain conditions. We have found these species breeding very prolifically in lagoons with a chlorin content almost equal to sea water.

I would suggest the perusal of Le Prince's paper in the *Transactions* of the Fifteenth International Congress on

Hygiene and Demography, and the articles dealing with mosquitoes in the reports of the New Jersey Agricultural Experiment Station.

A. J. ORENSTEIN,
Rand Mines, Ltd., Johannesburg, Africa.

A Substitute for Potassium Permanganate to Liberate Formaldehyd Gas From a Water Solution

To the Editor:—In THE JOURNAL, Sept. 19, 1914, p. 1025, I presented the formula of a mixture in which potassium permanganate was replaced by sodium dichromate.

We have found that the formaldehyd solution shipped in combination with the sulphuric acid, when subjected to the extremely low temperatures of winter, is not sufficiently stable for Northern climates. By adding 1½ fluidounces of glycerin to this formula, we have secured a stable solution that will bear moderately low temperatures without loss of efficiency and without polymerization. We are now using the following formula:

Sodium dichromate	10 ounces avoirdupois
Saturated solution of formaldehyd gas	1 pint
Sulphuric acid, commercial	1½ fluidounces
Glycerin	1½ fluidounces

We have also learned that when the acidulated solution has shown a tendency to become cloudy or milky because of the low temperatures, it may be clarified and made potent by gently warming for a long period of time.

SAMUEL G. DIXON, M.D., Harrisburg, Pa.
Commissioner of Health, Commonwealth of Pennsylvania.

The "Twilight Sleep"

To the Editor:—I am enclosing a little article from a lay paper—(clipping regarding the formation of a club known as the "Twilight Sleep Association"). I think the matter of the 'twilight sleep' is taking a serious character and it is high time for the American Medical Association to take steps against these quacks, whose first and only aim is the money part attached to it. They certainly have clever and excellent press agents and lead the public well.

H. HALLARMAN, M.D., New York City.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

THE HARRISON BILL

To the Editor:—According to my idea of the Harrison bill, it does not affect the men who write prescriptions, or prevent hypodermic medication, etc., but affects dispensers whether pharmacist or doctors of any sort. Am I correct? The $1 tax is what is troubling them. Kindly answer. J. A. H., Pittsburgh.

To the Editor:—Relative to the recently passed federal law regulating the traffic in habit forming drugs, THE JOURNAL with its characteristic promptness presented it to the profession in a clear, compact and scientific manner.

I have no legal knowledge other than an average amount of "horse sense," but immediately on looking it over, when reading my journal, I thought that while the intentions of the framers may have been of the best, their attempts were short sighted to say the least. On the other hand, they may be the victims of some hidden power of criminal drug traffickers. This is no excuse, however, and if I am correct in the conclusions I have drawn, then the framers ought to be ashamed of themselves for making another farcical law, one impossible to enforce.

Turn to Section 6 and you will note it reads in part that "this act shall not apply to preparations or remedies for external use only." Fine isn't it? What do you think, Doctor Editor? H. J. G.

ANSWER.—These are samples of inquiries received from readers of THE JOURNAL asking for details regarding the Harrison bill and its effect on physicians. This bill was before Congress for over two years, during which time it was frequently revised in committees or on the floor. On account of the numerous changes made, it is difficult, if not impossible, to know in exactly what form the bill finally passed. Three drug journals have published what purports to be the complete and exact text of the bill as enacted, yet no two of these three versions agree. It is obviously useless to comment on the bill until its exact provisions are known. A letter addressed to the United States Commissioner of Internal Revenue, asking for a certified copy of the law and of any rulings bearing on it, has elicited the reply that official copies of the bill have not yet been issued, but will shortly be published with official rulings as to its meaning, and regulations for its enforcement. As soon as this official information is available, THE JOURNAL will give a summary of the law for the benefit of its readers. In the meantime, there is no occasion for alarm or uneasiness on the part of physicians. The enforcement of a law involving so many details as the Harrison law will necessarily be undertaken slowly, and due announcement of the measure and its provisions will undoubtedly be made to all those affected by it. Several drug companies have recently sent out printed statements to their patrons regarding the provisions of this bill. In several cases, the statements made are clearly erroneous. Physicians are urged to await further information through the columns of THE JOURNAL.

METHOD OF CHAMPIONNIÈRE—EMULSION OF BALSAM OF PERU

To the Editor:—1. Where can I obtain detailed information in regard to Lucas-Championnière's method of treating fractures? Is there a book on the subject published in English?

2. Give me a formula for an emulsion of balsam of Peru containing either 5 or 10 minims of the drug to the dram of emulsion.

H. W. C.

ANSWER.—1. The following is a list of references to the original articles of Dr. Championnière. Practically all books on massage discuss his methods:

Lucas-Championnière, J.: Traitement des fractures par le massage et la mobilisation, Paris. Rueff & Cie., 1895, pp. 564.
Lucas-Championnière, J.: Les dangers de l'immobilisation des membres; fragilité des os; altération de la nutrition du membre, *Jour. de méd. et chir. prat.*, 1907, lxxviii, 81.
Lucas-Championnière, J.: Treatment of Fractures, *Brit. Med. Jour.*, 1906, ii, 1669.
Lucas-Championnière, J.: Treatment of Fractures by Massage and Mobilisation, *Brit. Med. Jour.*, 1912, ii, 1530.
Lucas-Championnière, J.: Traitement de la fracture du col du fémur par le mouvement immédiat et le lever, *Jour. de méd. et chir. prat.*, 1912, lxxxiv, 245.
Lucas-Championnière, J.: Détermination des nécessités du mouvement dans le traitement des fractures preliminaire du massage et de la mobilisation; préparation au traitement actif, *Jour. de méd. et chir. prat.*, 1910, lxxxi, 289.

2. Mistura olei-balsamica N. F. is an alcoholic solution of about 1 per cent. (5 grains to the ounce) of balsam of Peru and various aromatic oils.

The following emulsion gives practically 4 minims to the dram, and by increasing the amount of balsam of Peru to 4 drams, a proportion of 5 minims to the dram will be obtained. (See A. W. Gerrard, *Am. Jour. Pharm.*, November, 1880):

Balsam of Peru	3 drams
Powdered acacia	2 drams
Simple sirup	6 drams
Water	to 6 ounces

SOUTHEY'S TUBES IN DROPSY

To the Editor:—In a communication on "Sodium Chlorid in Bright's Disease" (THE JOURNAL, Dec. 26, 1914, p. 2305), Dr. Paul Z. Hebert of New York refers to the use of "Southey's tubes to reduce dropsy." Can you give me further information with regard to the use of the tubes, and indicate how successful the use has been?

J. W. CRENSHAW, M.D., Cadiz, Ky.

ANSWER.—The use of Southey's tubes is described as follows by G. P. Müller in "Practical Treatment," Musser and Kelly, Vol. 1, page 689:

> The apparatus consists of a trocar and several cannulas, the latter having lateral openings at their distal ends. After careful cleansing of the skin with soap and water, alcohol, and tincture of iodin, the skin is punctured at right angles to the surface and the trocar and cannula pushed as far as the muscle tissue. The trocar is then withdrawn and the cannula fitted to a piece of rubber tubing which drains into a receptacle. Three or four cannulas may be introduced in this manner, and should be supported by gauze packed around them. The serum often clots in the tubes and interferes with the drainage.

This method has been generally recommended, and is of temporary service in removal of edema.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

CONNECTICUT: New Haven, March 8-9. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven. Homeopathic; New Haven, March 9. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Eclectic: New Haven, March 9. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

KANSAS: Topeka, Feb. 9-11, 1915. Sec., Dr. H. A. Dykes, Lebanon.

MAINE: Portland, March 9-10. Sec., Dr. F. W. Searle, 776 Congress Street.

MASSACHUSETTS: Boston, March 9-11. Sec., Dr. Walter P. Bowers, Room 501, No. 1 Beacon St., Boston.

Georgia October Report

Dr. C. T. Nolan, secretary of the Board of Medical Examiners of Georgia, reports the written examination held at Atlanta, Oct. 13-15, 1914. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 80. The total number of candidates examined was 36, of whom 20 passed and 16 failed. Fourteen candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Birmingham Medical College (1913) 80.1; (1914) 83.6, 85.9, 88.		
Hospital Medical College, Eclectic	(1911)	83.8
University of Georgia	(1901)	83.3
University of Louisville	(1914)	92.3
University of Maryland	(1912)	89
Missouri Medical College	(1891)	80.4*
St. Louis College of Physicians and Surgeons	(1909)	86.3*
Leonard Medical School	(1913) 87.1; (1914)	89.6
Medical College of the State of South Carolina	(1914)	89.7
Chattanooga Medical College	(1896)	85.2
Meharry Medical College	(1914) 80,	83.7
University of West Tennessee	(1912)	80.8
Vanderbilt University	(1914) 93.1,	93.2
McGill University	(1913)	92.3

FAILED

Birmingham Medical College	(1914) 71.8,	75.7
Atlanta Medical College	(1914)	70.7
Georgia College of Eclectic Medicine and Surgery (1914) 71.7, 73.4, 75.5, 78.5.		
Southern College of Medicine and Surgery	(1913)	75.2
Bennett Medical College	(1914)	76.3
Knoxville Medical College	(1908)	75.6
Meharry Medical College (1908) 75; (1912) 77.9; (1914)		69.3, 77.1
University of Tennessee	(1914)	72.5, 73.8

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Southern Medical College	(1886)	Oklahoma
Louisville Medical College	(1893)	Oklahoma
University of Maryland	(1911)	Maryland
Eclectic Medical University, Kansas City	(1900)	Oklahoma
University Medical College, Kansas City	(1908)	Oklahoma
Columbia University	(1909)	N. Carolina
Cleveland Homeopathic Medical College	(1907)	Oklahoma
Eclectic Medical College, Cincinnati	(1905)	Oklahoma
Jefferson Medical College	(1912)	N. Carolina
Temple University (1912) Maryland; (1913)		Dist. Colum.
Memphis Hospital Medical College	(1891)	Oklahoma
Physio-Medical College of Texas	(1906)	Oklahoma
University of Virginia	(1911)	Virginia

* Official information from these colleges states that their records do not contain the names of these candidates.

Louisiana October Report

Dr. E. L. Leckert, secretary of the Louisiana State Board of Medical Examiners, reports the written examination held at New Orleans, Oct. 29-31, 1914. The total number of subjects examined in was 11; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 32, of whom 17 passed and 15 failed. Four candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Birmingham Medical College	(1912)	76.1
Louisville Medical College	(1896)	76.3
University of Louisville	(1912)	84.7
Tulane University of Louisiana (1911) 86.2; (1913) 93; (1914) 84.4, 87, 89.7.		76.3,
Memphis Hospital Medical College	(1911) 78.2; (1912)	76.1
University of Tennessee (1913) 79.7; (1914) 76.7, 77.6, 79.3.		
Vanderbilt University	(1914)	79.8
Baylor University	(1914)	87.5

FAILED

Atlanta College of Physicians and Surgeons	(1913)	*
Maryland Medical College	(1910)	63.2
Meharry Medical College	(1912)	64.8
Memphis Hosp. Med. Coll. (1901) 60.1; (1908) 59.7; (1912) (1913) 47.		45.8;
University of Tennessee (1913) 54.8, 73.3; (1914) 60.7, 63.7, 66.2, 73.5.		
College of Physicians and Surgeons, Dallas	(1907)	59.7†
Dallas Medical College	(1903)	56.2

* Withdrew.

† Graduation not verified.

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Johns Hopkins University	(1911)	Maryland
Harvard University	(1899)	Vermont
Jefferson Medical College	(1908)	Penna.
University of Pennsylvania	(1907)	Penna.

Montana October Report

Dr. William C. Riddell, secretary of the Board of Medical Examiners of Montana, reports the written examination held at Helena, Oct. 6, 1914. The total number of subjects examined in was 10; total number of questions asked, 50; percentage required to pass, 75. The total number of candidates examined was 25, of whom 16 passed and 9 failed. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
College of Physicians and Surgeons, Los Angeles	(1912)	75.5
Georgetown University	(1914)	82.4
American Medical Missionary College, Chicago	(1905)	75.2
Bennett Medical College	(1914)	81.1
Chicago College of Medicine and Surgery (1913) 77.5; (1914)		79.3
Northwestern University	(1914)	80.1
Rush Medical College	(1914)	85.2
Kentucky School of Medicine	(1904)	82.5
Johns Hopkins University	(1914)	86.7
University and Bellevue Hospital Medical College	(1899)	82.5
University of Pennsylvania	(1914)	78.1
Marquette University	(1914)	76.7
University of Toronto (1913) 79.2;	(1914)	77.3
Western University, London, Ont.	(1901)	77.2

FAILED

Chicago College of Medicine and Surgery	(1913)	69
College of Physicians and Surgeons, Chicago	(1910)	68.3
National Medical University, Chicago	(1907)	*
Keokuk Medical College	(1903)	73
John A. Creighton Medical College	(1913)	72
Medico-Chirurgical College of Philadelphia	(1900)	68
University College of Medicine, Richmond	(1907)	70.7
Marquette University (1913) 64.5; (1914		71.4

* No grade given; graduation not verified.

Wisconsin October Report

Dr. John M. Beffel, secretary of the Wisconsin State Board of Medical Examiners, reports the written examination held at Madison, October, 1914. The total number of subjects examined in was 24; total number of questions asked, 100; percentage required to pass, 75. One candidate was examined and passed. Fifteen candidates, including 3 osteopaths, were licensed through reciprocity. Nine candidates, including 1 osteopath, were granted complimentary licenses. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Jefferson Medical College	(1884)	82

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Chicago College of Medicine and Surgery	(1913)	Tennessee
Northwestern University	(1903) (1909)	Illinois
Rush Medical College	(1900)	Illinois
Indiana University	(1913)	Indiana
Tulane University of Louisiana	(1912)	Mississippi
Johns Hopkins University	(1911)	Maryland
University of Minnesota	(1899)	Minnesota
Dartmouth Medical School	(1910)	New Hamp.
University of Buffalo	(1911)	New York
Woman's Medical College of Pennsylvania	(1911)	Virginia
Royal University of Berlin	(1886)	Kansas

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Book Notices

OPERATIVE SURGERY. The Head and Neck, the Thorax and the Abdomen. By Edward H. Taylor, M.D., B.S., F.R.C.S.I., Professor of Surgery in the University of Dublin. Cloth. Price, $9 net. Pp. 524, with 300 illustrations. New York: William Wood & Co., 1914.

The author does not attempt to cover fully the operative surgery of the head, neck, thorax and abdomen, but deals only with the commoner and more important operations. There is a brief and elementary introductory chapter on the nature of infection and general surgical technic which more properly belongs in a book on principles of surgery. Ether is recommended as the general anesthetic of choice, and the statement that if chloroform were abolished, the advance of surgery would be hastened rather than retarded, shows that the British are gradually approaching the point of view so long held in this country. Hedonal as an intravenous anesthetic is recommended when patients are in a critical condition resulting from cachexia, hemorrhage, nephritis, etc. Local anesthesia receives far too scanty consideration. It is scarcely mentioned in such operations as hemorrhoidectomy, thyroidectomy, herniotomy and tracheotomy. Most of the important operations are exceedingly well illustrated. Cushing's technic is followed quite generally in the chapter on cranial surgery. For the radical removal of glands of the neck, the old curved incision is employed, which begins in the submaxillary region, extends backward and upward across the upper portion of the sternomastoid, and downward through the posterior triangle along the anterior border of the trapezius muscle. This leaves an ugly scar in the upper part of the neck. Kocher's technic is followed in thyroid operations, except that general anesthesia is still recommended. Little space is devoted to thoracic surgery, the subject being dismissed with the usual description of the operations for acute and chronic empyema, and for drainage of the pericardium. Hernia is very well given and well illustrated, as are all of the operations on the gastro-intestinal tract. A number of pathologic illustrations are employed in the chapters dealing with carcinoma of the colon and rectum. In gall-bladder work a straight incision is recommended for the simpler cases, and the Bevan method of extension when more room is required. The operations on the male genital and urinary tracts are extensively given. On the whole, the book gives a clear presentation of the subjects with which it deals, but possesses no new features that are worthy of comment.

ANESTHETICS: THEIR USES AND ADMINISTRATION. By Dudley Wilmot Buxton, M.D., B.S., Administrator of Anesthetics in University College Hospital, London. Fifth Edition. Cloth. Price, $3 net. Pp. 477, with 84 illustrations. Philadelphia: P. Blakiston's Son & Co., 1914.

This is essentially a manual dealing with the practical phases of surgical anesthesia. The discussions of the physiologic aspects of the question are almost entirely concerned with the more superficial phenomena associated with the action of anesthetic drugs. There is almost no mention of the really fundamental disturbances produced in the cell. Thus, there is no mention of such important generalizations as that of Meyer and Overton, concerning the relationship of the narcotic property of a drug to its partition coefficient between fat and water, or as that of Verworn in regard to the association of tissue asphyxia with narcosis. The book, therefore, again calls attention to the fact that there is no adequate presentation of what is already known about the theory of narcosis in any of the numerous works which claim to present what is termed the physiologic aspect of the subject. There are, however, many commendable features. The practical side of the administration of anesthetics is thoroughly covered. Like most Europeans, the author devotes far too much space and consideration to chloroform; but, on the other hand, it is encouraging to find as much consideration given to ether and nitrous oxid. The section on local analgesia seems a little brief, but nevertheless the subject is fairly well considered. There is an additional section on spinal analgesia and an interesting chapter on medicolegal aspects of the administration of anesthetics. One of the most interesting parts of the book is the first chapter, dealing with the historical aspect, in which due credit is given to the group of American pioneers in the application of sleep-producing drugs to surgical practice.

THE BODY AND ITS DEFENSES. By Frances Gulick Jewett. Cloth. Price 65 cents. Pp. 346, with illustrations. The Gulick Hygiene Series. Boston: Ginn & Co., 1914.

GOOD HEALTH. By Frances Gulick Jewett. Cloth. Price 40 cents. Pp. 174, with illustrations. The Gulick Hygiene Series. Boston: Ginn & Co., 1914.

These two volumes belong to the Gulick Hygiene series, previously reviewed in THE JOURNAL. The first is intended for the elementary grades and discusses methods of personal health, what to do for the eyes, ears, teeth, finger nails, hair, etc., how to keep clean, how to get pure air and how to avoid the ills that come through violation of the laws of good health. The intention of the writer has been to write "a little book for a little child." It is simply written and freely illustrated, being divided into short chapters, each followed by a few questions intended to emphasize important points. The second book is intended for older children and deals with applied physiology as well as hygiene. The two have been adopted for use in the public schools of Kentucky, and a special edition prepared containing a supplement by the State Board of Health, which is perhaps the most unique feature of the two volumes. The apparent and close cooperation between the State Board of Health and the educational authorities is highly commendable. Figures from the State Bureau of Vital Statistics are freely quoted, showing the number of births and deaths and the number of deaths from preventable diseases in Kentucky since 1911. Special emphasis is laid on the fact that the greatest asset of the state is the health of its people, and an appeal is made to each child to assist in raising the health standard of the state to the highest possible point.

REDUCING WEIGHT COMFORTABLY. The Dietetic Treatment of Obesity. By Prof. Gustav Gaertner, M.D. Cloth. Price, $1.50 net. Pp. 313. Philadelphia: J. B. Lippincott Company, 1914.

The author bases his practice on an experience with 2,000 cases of obesity. This experience has brought him to the employment of a diet based on the well-known principle that a reduction in the total quantity of food below the actual needs of the patient must lead to a reduction in body weight. The method depends on the careful use of the scales, with reference both to the weight of the patient and to the weighing of food. The author first subjects his patient to careful observation to determine the average difference in weight between the maximum and minimum of each day. Based on this, the diet is so regulated as to reduce the weight without encroaching on the minimum. In this way, the patients lose weight without feeling discomfort. The diet is then regulated according to a definite plan as to the amount of body weight to be lost. Details of the treatment have reference to the use of different articles of diet and of water, and also the effect of various forms of regimen. Exercise is used moderately but not to excess. The author recognizes the principle that exercise necessarily increases appetite, and hence renders it difficult to restrain the intake of food. The book is a rational and practical discussion of an important but neglected subject.

FEAR AND CONVENTIONALITY. By Elsie Clews Parsons, Ph.D. Cloth. Price, $1.50 net. Pp. 239. New York: G. P. Putnam's Sons, 1914.

While not exactly within the field of medicine, this book can be read with profit by physicians, dealing as it does with the psychologic and evolutionary causes of fear and conventionality. The general thesis of the writer is that practically all of the conventions of modern civilization are based on or at least have their parallel in some similar, though often absurd, custom of primitive peoples. While somewhat destructive of one's own conventional ideas regarding good breeding and manners, the intellectual stimulus to be gained from reading the book is worth the risk.

Medicolegal

Power of Vice President to Contract for Medical Services

(James Sanatorium vs. Yadkin River Power Co. (N. C.), 83 S. E. R. 464)

The Supreme Court of North Carolina affirms a judgment in the plaintiff's favor for medical services rendered to one Flake, who was an employee of the defendant company. The court says that it was in evidence that Flake was taken to the hospital by the defendant's physician, who stated that he had done it by order of the defendant's vice president, and that the plaintiff would send its bill to the defendant, who would pay it. The next day the vice president called over the telephone, from the factory of the defendant, to the president of the plaintiff company, and inquired "How is my man, Flake, I sent you last night?" He further asked the details, and told Dr. James to "give him every possible attention and, if he needed any special care, to give him special nurses and he would see that there was no trouble about the money, and to send the bill to him, and the Yadkin River Power Company would pay it." Prior to that time the plaintiff had rendered medical services to a typhoid fever patient, at the request of the defendant's vice president and physician, who stated that the Yadkin River Power Company would pay the bill, and it was paid according to the evidence of both the plaintiff and the defendant.

The chief contention was that the office of vice president does not necessarily confer power to contract debts for the corporation. It is true enough that the power of a vice president depends, not on his title, for his function differs according to the by-laws or according to the use and practice of the particular company. In some railroad companies there are many vice presidents who have great authority. There are other companies in which the vice presidency is a mere ornamental position. No general rules can be laid down as to the power of a vice president to bind the company, which would arise as a presumption in the case of the president.

In this case there was evidence sufficient to go to the jury to establish the authority of the vice president to act for the company in cases of this kind. His calling up the president of the sanatorium company from the office of the defendant, stating to him that Flake had been sent there by his authority, making full inquiries about him, and directing the bill to be sent to him, saying that the defendant would pay it and asking for special attention to be given to Flake, together with the fact that Flake was also carried to the sanatorium by the salaried physician of the defendant, and the further fact that another patient had been sent there by the vice president, accompanied by the physician of the company, and that by their direction the bill had been sent to the defendant and paid by it—all these things were sufficient to submit to the jury the question as to the authority of the vice president in this case, and it would have been error to direct a non-suit on this evidence.

Opinions of Attending Physicians and Others as to Mental Capacity

(Bahl vs. Byal et al. (Ohio), 106 N. E. R. 766)

The Supreme Court of Ohio holds that it is not competent, in a proceeding to contest a will, for a witness to give an opinion as to whether the testator had capacity to make a will. But the physical and mental conditions from which it may be determined by the court and jury whether he had such capacity are facts which may be shown by manifestation of such conditions. And it is competent for the physician of a testator to express an opinion as to the actual condition of his patient's mind, founded on his study and observation of the testator while in professional attendance on him at the time and prior to the date of the will, and whether he was capable of comprehending large and complicated business propositions or the distribution of a large estate.

The court says that it is not doubted that the opinions of physicians touching questions of mental strength or weakness are competent to be given in evidence in cases in which those matters are in issue. The weight to be given the evidence in a particular case is to be determined by the jury, as the testimony of witnesses touching any other matter should be determined. Where the physician has had opportunity to observe mental conditions by reason of having acted through a sufficient period of time as medical attendant, it is proper for him to express an opinion on the actual condition of the patient's mind at the times, or during the period, in which he was so engaged. And where the grounds have been properly laid for a hypothetical question, a physician, who has properly qualified as an expert, may give his opinion as to the mental condition of the person referred to in the question under the circumstances stated therein. These principles are well recognized.

A physician, giving his opinion on the mental capacity of a testator, or other person, which is based on the actual knowledge which the physician has gained by personal contact with, and study of, such person as a patient, occupies a different relation to the matter than a physician who has no such knowledge, and who testifies in answer to hypothetical questions. The only sound theory on which the opinion of an expert is admitted at all is that he has the knowledge, training and experience with which to form a better opinion on a certain state of facts than one not so well equipped. Necessarily, the opinion of a physician, which has been formed by the slow and sure processes of time and responsibility in connection with the performance of professional duty to a patient, is more valuable than that of one who has not such advantages and gives his opinion from a hypothetical question. The line between strength and weakness in the mind is so elusive that it may well be doubted whether a stranger can be brought by descriptions of the mental manifestations of a particular individual into a position to make his testimony concerning it of great value, except in well-defined cases. There is an increasing loss of confidence in that class of expert testimony.

Malpractice Not Covered by Casualty Insurance

(May Creek Logging Co. vs. Pacific Coast Casualty Co. (Wash.), 144 Pac. R. 67)

The Supreme Court of Washington affirms a judgment rendered in favor of the defendant, which was sued by the plaintiff to recover $4,500 and costs, which the latter had had to pay because a physician and surgeon whom it had furnished to attend an injured employee had treated him so unskilfully and negligently that he was permanently crippled. The court says that the defendant had insured the plaintiff against loss and expense arising from claims or damages on account of bodily injury accidentally suffered by the prosecution of general logging operations, "and the various departments thereof, and dependent and connected operations and parts thereof." The plaintiff alleged that it was the custom of logging companies to deduct a hospital fee from the wages of each of their several employees, and use the fee in the payment of services to be rendered such employees as became sick or injured, and that the defendant knew of such custom, but the court cannot think that the facts in any way altered or modified the terms of the insurance. A demurrer to the plaintiff's complaint was properly sustained on the ground that the loss suffered by the plaintiff was not a loss covered by the conditions of the policy. The defendant's liability, of course, depended on the conditions of its policy. If it thereby undertook to answer for losses arising from claims of damages on account of the negligent failure of the plaintiff to perform a special contract wherein it undertook to furnish an employee with hospital, medical and surgical services, then it was liable to answer to the suit of the plaintiff; otherwise not. The court cannot think the policy bore this interpretation. Hospital, medical and surgical services were no part of the logging operations, and the injured employee while in the hospital was performing no service connected with the plaintiff's logging business.

Society Proceedings

THE COLLEGE OF PHYSICIANS OF PHILADELPHIA

Meeting held Dec. 14, 1914

DR. JAMES E. TALLEY in the Chair

Recent Changes in Our Concept of the Action of Digitalis

DR. H. C. WOOD, JR.: When given in physiologic dose, digitalis does not increase the blood pressure in either man or the lower animals. It is probable, however, that there is some constriction of the blood vessels, as is shown by the fact that when the slowing of the pulse is prevented, the pressure is increased, and it is probable also that the diuretic effect is due to changes in the caliber of the vessels. The slowing of the pulse, which is the most constant effect of digitalis, is, in healthy individuals, purely inhibitory. Stimulation of the vagus may produce heart block and other irregularities of rhythm. The slowing of the pulse is completely abolished by large doses of atropin. The muscular tone is not demonstrably affected after small doses, although it is possible that the largest therapeutic doses may increase it. The cardiac contractions are, however, enlarged. The effects in disease are often very different from those in health. In fever the vagus appears to be less than normally irritable, and digitalis does not slow the pulse. In chronic endocarditis the effects are different, according to whether the rhythm is normal or there is auricular fibrillation. In the latter condition, it will generally produce great slowing of the pulse. It is impossible from the present data to draw positive conclusions as to the mechanism of its action in this condition, but it is probably due to stimulation of inhibition and partly to diminished ventricular irritability, the result of better nutrition. In cases of endocarditis with normal rhythm, its effects are often much less marked. It is a mistake to give digitalis in all cases until the manifestation of toxic effect. Some conditions require larger doses to have any action, while others may be injured by full doses but benefited by small ones.

Clinical and Electrocardiographic Studies of the Action of Digitalis

DR. ALFRED E. COHN, New York: Investigations were made in patients having an early rather than an advanced stage of heart disease. The mechanism of their hearts was normal, they had no edema, and their blood pressure was within normal limits. The reduction in the rate of the heart is an effect of digitalis on which we rely, but one which we have not found constant in this type of case. Digitalis slows the sinus rhythm only in the group of hypodynamic hearts; to produce slowing is not a function of digitalis in therapeutic doses. An effect on conduction may be set down as a usual effect of giving the drug, apart from specific preexisting injury. We have noticed delayed conduction within forty-eight hours after the administration of the drug had been started. In many instances the auriculoventricular interval gradually lengthened during the succeeding three to five days, until partial heart block occurred. In some cases, however, block occurs with extreme abruptness. One arhythmia, practically unknown, the result of giving digitalis, is one in which none of the auricular beats are blocked. The auricles and ventricles continue to beat almost at the same time, but there is incomplete coordination between them. Another new sign in the electrocardiogram is an alteration in the size, shape and direction in the T-wave. The first change noted after the administration of digitalis is usually a diminution of the height of this wave, usually in the third lead first, and later in the second. The change may be noticed as early as twenty-four hours, and at the end of forty-eight hours the wave may have become iso-electric, or it may become diphasic. In some electrocardiograms, the T-wave for pathologic reasons is pointed downward. If digitalis is given, the direction of the T-wave during the action of the drug is pointed upward. While the causative factors in the change of the T-wave cannot be precisely explained, the inference is that there is an alteration in the contractile substance of the heart muscle. Two criteria appear, then, in electrocardiograms to indicate surely the fact that digitalis is acting on the heart: the first in the slight but definite lengthening in conduction; the second, the very curious alteration in the T-wave. Electrocardiographic evidence can be supplied to show that digitalis has an action during fever of a nature precisely similar to that already described in non-febrile patients. Possibly as an aid to contraction, much can be gained from the use of digitalis; but the expectation of obtaining an action on heart rate must be abandoned. There is, however, a group of febrile cases in which digitalis acts efficiently on rate. These in our experience have been patients showing auricular fibrillation or auricular flutter. Another topic long a subject of conflict is the relation of digitalis action to blood pressure. In the cases which we have studied, no alteration in pressure was found. Vascular effects, however, aside from changes in pressure, may be produced, and the untoward or beneficial nature of these require consideration. In the group of patients under consideration, no increase in diuresis takes place. In patients having edema, other factors are involved. That a specific effect on urinary output does not occur as the result of giving digitalis in the patients under discussion has an important bearing on the drug's action in edema. In connection with the mechanism of the action of digitalis, two possibilities have been much discussed; an action on the inhibitory mechanism and one on the heart muscle itself. Our studies lead us to believe that both views are partially right. So far as atropin may be taken to be a drug acting especially on the ends of the vagi, a release of the heart from a phase of digitalis action by its use indicates a nerve action of digitalis. So far as digitalis has other effects which atropin does not release, its effect on the T-wave, it may be inferred that it has an action directed more especially to muscle. Both effects can be observed at the same time.

NEW YORK NEUROLOGICAL SOCIETY

Meeting held Dec. 1, 1914

DR. E. G. ZABRISKIE in the Chair

Brain With Double Frontal Abscesses

DR. L. CASAMAJOR: The patient was a mechanic and inventor, aged 50, whose family history was negative. Between 20 and 30 he had several severe attacks of articular rheumatism, with heart complications. The patient had always been very active as a young man, and at one time was a long distance bicycle rider. Until about twenty years ago he used alcohol habitually and to excess, but for fifteen years preceding his death he had been a total abstainer. He smoked constantly and used chewing tobacco daily. During the past ten years he had worked very hard at his trade and had accomplished a great deal in a mechanical line. He took no recreation excepting a few days each summer, when he did some yacht racing.

The exact date of the onset of his present illness could not be fixed. He was in the habit of receiving osteopathic treatment for minor ailments, and was under the care of an osteopath when he came under observation, March 10, 1914. At that time he complained only of a slight frontal headache and of being unusually tired. He was slightly jaundiced. The pupils were contracted, reacting slowly. The tongue was heavily coated and the breath offensive. The temperature was normal; pulse, 60 and full. On his first day in the hospital he refused to stay in bed; he wished to go to business and insisted on smoking his pipe. On the following day he kept his bed and abstained from tobacco. He remained in his usual jovial mood, and his symptoms were such as one would expect in a case of catarrhal jaundice. His condition remained practically unchanged for four days, without improvement in appetite, appearance of tongue, etc., in spite of active purgation.

On the fifth day he was quite indifferent to his surroundings and very talkative. His headache had disappeared almost entirely, and he still complained of nothing. When left alone he talked and whistled, and was not at all disturbed when he soiled the bed by an involuntary defecation. His pulse remained slow, and the rectal temperature on the fifth day was 101 F. The urine was stained deeply with bile; it contained a trace of albumin; no sugar; there was a marked indican reaction and a few hyaline casts. No complete blood count was made, but a differential count showed 79 per cent. polynuclears. The stools were offensive and lighter in color than normal. The pupils remained contracted and sluggish, acting equally. The ears showed nothing abnormal, and there was no nasal discharge.

The patient remained in practically the same condition for another twenty-four hours, appearing indifferent when he was alone, but acting quite rational on being questioned. There was no paralysis and the reflexes were normal, excepting pupillary. His temperature, on the evening of the sixth day, was 101 F. in the rectum; pulse, 54; respirations, 18. At 8 a. m. on the seventh day after his admission, he suddenly developed a chill, the rectal temperature rose to 106 F., he became comatose, developed Cheyne-Stokes respiration and died in three hours.

The brain was removed; about half an ounce of foul-smelling pus escaped through the right frontal lobe. Further exploration showed a double frontal abscess, undoubtedly primary on the right side and extending through the corpus callosum into the left frontal lobe. No other abnormality was found. The pus contained the *Bacillus pyocyaneus.*

Some Psychologic Studies on the Nature and Pathogenesis of Epilepsy

DR. L. PIERCE CLARK: The potential epileptic, as a rule, possesses a supernormal output of energy which is constant and fairly productive of good developmental results as far as the organic makeup is concerned. There is a poorly repressed or thinly inhibited outcropping of the egotistic tendencies. These characteristics of a pathologic self-love are far beyond the bounds of a pure physiologic variation. As a rule, the potential epileptic is not well adapted to his environment and cannot easily change it. He cooperates badly in social and economic settings. For the most part he is frank; the subtleties of mind are not his; on the contrary, he has a simple, childlike pattern of emotional life. He never has the scruples or doubts of the obsessive neurotic; not being hindered with the inhibitions and prohibitions of the latter class, he is often permitted to become engrossed with the lower animal instincts and passions. With the inhibitions reduced and with an overemphasized estimate of his own importance and ability, the potential epileptic finds himself in constant conflict with the outside world. While the normal individual has his infantile struggle with reality and has made the life compromise, the potential epileptic youth keeps up the baffling struggle; hence his deep-rooted dislike and even hate of the outside world. Individuals who possess the epileptic constitution lack real general interests. The libido is rigid, self-centered and crude. There are small religious promptings; the meaning and ends of life rarely engross the potential epileptic. His friendships are perfunctory: the egotistic traits prevent a free range of emotional expression. A parental attachment of the potential epileptic to his own sex is the rule, and this is especially marked in girls. The love fixation to the mother in the majority is prominent more or less throughout life. The potential epileptic's attitude toward the opposite sex is very significant: it rarely possesses the higher love attributes and more frequently evolves little beyond the simplest or grossest sexual demands. That fact alone, independent of the superadded convulsive disorder, makes marriage among epileptics almost invariably a failure.

The fit serves as an unconscious gratification to the libido. By dream analysis, the analysis of many minor attacks and a few major fits, this unconscious striving is often a frank sexual outlet; in others it is discharge of accumulated pleasure affects that have been long accumulating. The essential motive in all genuine epileptic fits would seem to be at bottom unconscious striving on the part of the epileptic to return to the intra-uterine life in the mother in a state of perfect peace and *Allmacht,* with its insistent urge in the fits, and is conditioned on the stage of libido fixation in infancy, which occasionally may be so advanced as to reach into homosexuality but rarely into heterosexual life.

The seizure movements are point for point identical with the impulsive movements of the fetus and the period of earliest infancy. In the normally developing child, these muscular movements are slowly but definitely repressed as the will and the conscious life unfold: in the epileptic the impulsive movements of earliest infancy are released from conscious and voluntary control, and they reenact the fetal and infantile purposes of satisfaction of that period.

DISCUSSION

DR. SMITH ELY JELLIFFE: The *Mutterleibs Phantasie* is encountered in various phenomena in addition to the epilepsies, such as in various conversions and compulsive phenomena. It would be of practical interest in the analyses of the epileptic phenomena to see just how the individual has evolved the universally present Oedipus situation through the individual muscle erotic gratification.

SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION

Seventy-Seventh Annual Meeting, held at Asheville, N. C., Dec. 15-17, 1914

(*Concluded from page 367*)

Diaphragmatic Hernia

DR. JOHN D. S. DAVIS, Birmingham: I have seen five cases of traumatic diaphragmatic hernia. When an operation is decided on, the question arises, which is the best route to follow. The thoracic route presents great advantages. It has one decided merit in injuries of the chest, in that the external wound itself serves as a guide. The chest is to be opened at the site of the wound and the course of the wound followed. Further, this is the most direct route. It affords space to reduce the hernia if one is found to exist and for enlarging the diaphragmatic wound and treating the hernia. There are two objections to thoracotomy. The first is the danger of pneumothorax; second, the route does not permit exploration of the peritoneum and its contents. In the cases in which it is important to ascertain what viscera, if any, have been wounded, an abdominal section is necessary. Each case should be approached according to its individual features, but the superiority of the transpleural route in the treatment of thoracico-abdominal wounds seems to be indisputably established. I recommend as a rule Cranwell's trap-door opening with the base above. The resection of one rib is often sufficient, and it is seldom that the incision needs to extend above the eighth rib in front or the seventh behind.

Treatment of Angiomata by Injection of Boiling Water (Wyeth Method)

DR. FRANCIS REDER, St. Louis: In a series of 26 cases subjected to this treatment I have had no failures. In every instance the results have been gratifying. Most of the cases presented the lesion on the face and scalp. Four patients presented angiomata on the tongue, ranging from the size of a filbert to that of an English walnut. One patient presented the lesion on the left gluteal region as large as a cocoanut; another patient presented a fusiform angiomatous growth on the right middle finger between the second phalangeal articulation and the knuckle. This tumor caused great pain. The course of an angioma successfully injected is one of gradual diminution, the greatest progress being made from the second to the third week. A tumor the size of a hen's egg usually requires six or eight weeks for its disappearance. If the injection has been free from

any accident, such as cicatrization following sloughing, the site that once harbored the angioma will appear healthy and quite normal.

The Bulgaria Bacillus in Cystitis with Alkaline Urine

DR. FRANCIS R. HAGNER, Washington, D. C.: A patient gave a history of chills, fever, recurrent attacks of urinary frequency and tenesmus extending over a period of three weeks, with cloudy, alkaline urine. Cystoscopic examination showed a bright velvety area just behind the right ureteral orifice; roentgenogram negative for calculus; the possibility of tuberculosis of the right kidney was considered, and several urinary examinations failed to show the bacilli. Guinea-pigs inoculated continued to gain weight. The right kidney urine was strongly alkaline and contained much pus and some blood, while the urine from the left was faintly alkaline, containing but a small amount of pus. Instillations into the bladder improved the patient's condition, but the urine from the right kidney continued alkaline and the pus continued to be present in the urine. I then injected the kidney with the *bulgaricus Bacillus*. Two tablets were dissolved in 10 c.c. of sterile water and injected into the kidney pelvis through the ureter catheter. The patient had no trouble for thirty-six hours, when he had quite a sharp chill, temperature rising to 103.5 F. but becoming normal in twelve hours. The day following the injection the patient's urine was acid, and although I made two more injections into the bladder, no more treatment was directed to the kidney. The patient has now been away from the hospital two weeks, his urine remaining clear, acid, and free from pus.

Massive Umbilical and Ventral Hernias

DR. ALEXIUS MCGLANNAN, Baltimore: In a series of 1900 non-strangulated inguinal hernias there were four deaths, a mortality of a little over .2 per cent., while in a series of 197 umbilical and ventral hernias operated on by the same group of surgeons during the same periods of time, there were six deaths, about 3 per cent. mortality. In this latter series there were forty-six massive hernias with three deaths, about 6 per cent. In a second series of twenty-six cases there were four strangulated hernias. Two of these patients died. Of the twenty-two non-strangulated cases, one patient died on the second day from dilatation of the heart. Sixteen patients were handicapped by lesions other than the hernia. There were six heart lesions, six renal, two of arteriosclerosis, and two of obesity.

Surgical Treatment of Perforating Duodenal Ulcer

DR. JOHN YOUNG BROWN, St. Louis: A woman aged 48, entered the hospital, March 9, 1914. A diagnosis of benign pyloric obstruction was made. Early in the morning following her admission she became decidedly worse and an immediate operation was done. The abdomen was opened through the right rectus muscle. In the region of the gall-bladder and duodenum there was marked localized peritonitis. Separating the adhesions of the gall-bladder to the duodenum a perforation the size of a lead pencil was located. It was closed immediately and reinforced with an omental graft. Posterior gastroenterostomy was out of the question and instead we did a jejunostomy with the hope of building her up by liquid feeding. She recovered nicely from this operation, and under liquid feeding she gained 12 pounds in three weeks.

The second operation consisted in opening the abdomen, closing the jejunal fistula and doing a posterior gastroenterostomy. From this operation she recovered nicely, left the hospital in two weeks, and is now in perfect health, having gained at least 20 pounds.

Use of Skin Grafts in the Ambulatory Treatment of Ulcers

DR. JOHN S. DAVIS, Baltimore: From the results obtained in the first fifty cases in which grafts have been used in the ambulatory treatment of ulcers, I feel that we have added to our armamentarium a method of treatment which has hitherto been used only on patients resident in the hospital. In other words, the successful use of grafts in the outpatient department will make for hospital economy and will also hasten the return of many patients to full wage-earning capacity.

Passive Congestion of Liver Simulating Abdominal Tumor

DR. CHARLES R. ROBINS, Richmond, Va: A woman, 42 years of age, suffered with right upper abdominal distress for ten years, during which time she had been getting steadily worse. She had not been able to lie on this side for five months without its beginning to thump. There was marked local pain and tenderness. Six weeks previous to admission to the hospital, she had been taken with a fever, during which she had two decided chills, and became jaundiced. The fever and jaundice gradually cleared up. She had a similar attack six months previously. Since her last attack her appetite had not been good. She suffered from nausea and could not take solid food or cold drinks. Her abdomen had been swollen a great deal but had subsided. In the upper abdomen to the right of the median line and coming apparently from the under surface of the liver was a globular tumor about the size of a grape fruit, which could easily be felt and which moved with respiration. It was quite tender and tense and gave the sensation of fluid in a tight sac. Owing to the large abdomen, physical signs were not distinctly elicited. The Wassermann test, examinations of blood and urine were negative. On opening the abdomen the tumor was found to be the dark swollen and congested right lobe of the liver which was prolapsed and rotated so that it projected into the abdomen, the edge of the liver being rounded off by the swelling. The liver had a slight nutmeg appearance. A section of the liver was examined microscopically and showed marked fatty degeneration with some cirrhosis and round cell infiltration. A markedly inflamed appendix was found and removed at operation.

Hemangio-Endothelio-Blastoma of Stomach

DR. J. GARLAND SHERRILL and DR. F. S. GRAVES, Louisville: We had a case of this very rare affection in a woman of 31. In 1907 she fell striking her epigastrium against the corner of a table. Later she began to complain of loss of appetite, nausea, symptoms of indigestion and epigastric discomfort. Attacks occurred especially at night with regurgitation of food and eructations of salty material. She vomited blood once or twice. There was more or less constant pain in the abdomen, which was relieved by eating. Marked anemia developed with loss of flesh and a peculiar cachexia. When examined at this time she was tender over the region of the stomach and a palpable thickening could be felt in the epigastrium. This mass moved up and down with respiration. At times it could not be felt. Blood examination at this time was negative to malaria; 3,500,000 red cells; 7,000 leukocytes; hemoglobin 30 per cent. A diagnosis of gastric ulcer was made. Rest in bed, carefully selected diet and treatment of the ulcer brought prompt improvement. Subsequently this improvement seemed to be hastened by antisyphilitic treatment. She came under observation once or twice during the next five years, but was at no time under constant supervision. Her condition remained fair, but the mass persisted, sometimes palpable, sometimes not, always following the respiratory movements and also quite freely movable. About two years ago she had an attack at night, when she felt weak, yawning, with impaired vision and a slow feeble pulse. Within thirty-six hours the stools were black and blood was detected in them. Her anemia improved at times and then recurred. The lump in the abdomen seemed to enlarge and was more tender at her menstrual periods. Wassermann test was negative. A diagnosis of gastric ulcer with a growth, probably a tumor, was made, although the possibility of a floating kidney was considered. Abdominal section was done Oct. 5, 1914. A reniform mass growing from the greater curvature of the stomach near the pylorus and covered by the greater omentum presented to view. This mass was mottled, purplish in color, and had a rather broad attachment to the stomach. It moved freely with that organ, having no other attachments. A portion of the stomach about

4 inches in length along the convex border and 2½ inches along the concave border was removed, together with the mass and a portion of the upper part of the duodenum including the pylorus, and the gastroduodenostomy was completed in the usual manner. The pathologic report on the tumor was hemangio-endothelio-blastoma.

Cure of Cancer of Uterus by Curetting for Diagnosis

DR. HERMAN J. BOLDT, New York City: A woman, 47 years of age, had been advised to have a hysterectomy done for cancer. The diagnosis was taken from scrapings. Not being able to find, either subjectively or objectively, the slightest evidence at that time for suspecting cancer of the corpus uteri, I proposed another curetting for diagnosis. All scrapings were found to be normal endometrium. Some time after this, two slides with the scrapings from which the diagnosis of this case had been based were given to me for inspection. They showed advanced adenocarcinoma. A number of authoritative pathologists examined these and the sections from the scrapings taken by me. All who examined the scrapings for me expressed as their opinion that it was more likely that an accidental mix-up in the scrapings had occurred than that they came from the same patient. Opposed to this is the statement of the pathologist that this could not have taken place. This would then be the first and only case in which an advanced adenocarcinoma has been cured by a curetting for diagnosis. A second case was that of a woman of 36 in whom the examination of scrapings removed by curetting, done during the course of other operations, on November 7, without suspicion of carcinoma being present, showed distinct early adenocarcinoma. When the uterus was extirpated two weeks later, the most painstaking examination of serial sections of all parts of the uterine mucosa failed to show cancer.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

January, LXXI, No. 1, pp. 1-208

1 Dynamics of Female Pelvis; Its Evolution and Architecture with Respect to Function. E. A. Schumann, Philadelphia.
2 Heteroplasia in Carcinoma Uteri. L. W. Strong, New York.
3 *Urinary Catalase in Health and Disease. M. Kahn and C. J. Brim, New York.
4 New Vaginal Wire Speculum. H. J. Hartz, Philadelphia.
5 Clinical Observations in Europe. P. Findley, Omaha.
6 Gangrene of Limbs During Puerperium. C. G. Cumston, Geneva, Switzerland.
7 Introspection in Gynecology. F. A. Rhodes, Pittsburgh.
8 *Iodin as Sterilizing Agent in Supravaginal Hysterectomy—With Remarks on Morbidity. I. S. Stone, Washington, D. C.
9 *Torsion of Ovarian Cysts. Report of Cases. K. I. Sanes, Pittsburgh.
10 More Common Gynecologic Conditions Necessitating Operation. W. H. Humiston, Cleveland.
11 Operative Findings in Twelve Cases of Chronic Intestinal Stasis. W. S. Bainbridge, New York.
12 *Report of all Abdominal Cesarean Operations (571) Performed in Service of Lying-In Hospital, New York. A. B. Davis, New York.

3. **Urinary Catalase in Health and Disease.**—The urines of normal individuals and patients suffering from various diseases was examined for catalase by Kahn and Brim in order to observe whether there was any constancy in the presence or absence of catalase as regards any specific disease. Traces of catalase were found in normal urine that had been freshly voided. In the urines of a number of patients suffering with various ailments, the catalase content varied. It was found especially high in urines that reacted positively for blood, bile or acetone. Quite a number of urines of patients suffering from cancer were tested for catalase, and no variations from the normal were observed, except when bile, blood or acetone was present. Cases of lymphosarcoma and Hodgkin's disease gave very high catalase content in the urine. In severe diabetes, patients with acidosis eliminated very largely increased amounts of catalase in the urine; on the other hand, diabetics who had no acetonuria showed no variation from the normal in the amount of urinary catalase. Typhoid patients and others with general septic infections excreted increased amounts of catalase; more if bile, acetone or blood was present.

8. Abstracted in THE JOURNAL, June 27, 1914, p. 2048.

9. Abstracted in THE JOURNAL, Oct. 10, 1914, p. 1320.

12. **Abdominal Cesarean Operations.**—In 571 cesarean deliveries analyzed by Davis, 577 children were born and sixty-one mothers died. Sixty-nine children were either stillborn or died before leaving the hospital, a fetal mortality of 12 per cent. Twenty-three, or 4 per cent., were stillborn. From the 61 mothers who died following cesarean section, 62 children were delivered. Forty-four children lived, 11 died, and 7 were stillborn. Eclampsia and toxemia of pregnancy were the indications for cesarean section in 35 cases; 22, or 63 per cent., of the mothers recovered; 13, or 37 per cent., died. From these 35 women, 37 children were born, 26, or 70 per cent., of these children lived. Eleven children, or 30 per cent., were either stillborn or died. Four were stillborn. Seven died. Period of gestation in these 35 cases: 14 at the tenth month, 3 at the nine and one-half month, 12 at the ninth month, 2 at the eight and one-half month, 1 at the eighth month, 1 at the seven and one-half month, 2 at the seventh month.

Placenta praevia was the main indication in 21 cases; 2 of these mothers died from sepsis; 21 children were born, 14 children lived, 4 children died, and 3 children were stillborn. The fetal mortality was due to prematurity. There were 3 cases of accidental hemorrhage, the mothers and 1 child lived. One child was stillborn; 1 child was premature and died in a few hours. Seventy-eight women have been delivered more than once by cesarean section; 60 the second time, 15 the third time, 1 the fourth time, 1 the fifth time, one the sixth time. Rupture of the uterus in labor subsequent to cesarean section occurred in 6 cases. Three mothers died. Three mothers recovered. Two children lived. In these 2 cases the children were in the uterus and alive and were delivered by cesarean section.

The main indication for cesarean section was some form of contracted pelvis or deformity of the spinal column in 441, or 79 per cent., of the cases. There were 9 cases of some neoplasm occluding the pelvis as the main indication for cesarean section; and 9 cases following some form of suspension of the uterus required a cesarean operation. In 18 cases an unduly large child was the indication. There were also 7 cases of post mortem cesarean section. Two children were delivered alive. One lived six days. The others lived.

American Journal of Public Health, Boston

December, IV, No. 12, pp. 1127-1256

13 Modern Aspect of Tuberculosis Problem in Rural Communities and Duty of Health Officers. S. A. Knopf, New York.
14 Investigation of Uncinaria Infection at Ping Hsiang Colliery, Central China. A. C. Reed.
15 Sanitation in Brazil. E. Stuart, Santos, Brazil.
16 Improved (Durham) Fermentation Tube. I. C. Hall, Berkeley, Cal.
17 Comparison Between Twenty Degree and Thirty-Seven Degree Plate Counts for Enumerating Bacteria in Water. J. B. Thomas and E. A. Sandman, Baltimore.
18 Supervision of Communicable Diseases in Smaller Municipalities. H. W. Hill.
19 Quequechan River Improvement, Fall River. F. H. Fay, Fall River, Mass.

American Journal of Roentgenology, Detroit

October, I, No. 12, pp. 449-495

20 Roentgen Examination of Sphenoid Sinus. D. R. Bowen, Philadelphia.
21 *Advanced Roentgen Technic in Diagnosis of Esophageal Lesions. W. H. Stewart, New York.
22 *Interpretation of Pericolic Membranes. E. H. Skinner, Kansas City, Mo.

21. Abstracted in THE JOURNAL, Oct. 10, 1914, p. 1322.
22. Abstracted in THE JOURNAL, Oct. 3, 1914, p. 1227.

Boston Medical and Surgical Journal

January 14, CLXXII, No. 2, pp. 41-80

23 *Ovarian Transplantation: Report of Case of Implantation into Uterus with Resulting Pregnancy. M. Storer, Boston.
24 Study of Epilepsy of Dostojewsky. L. P. Clark, New York.
25 Occupational Disease and Public Health. D. B. Armstrong, New York.
26 *Modification of Technic for Hare-Lip Operation. W. E. Ladd, Boston.

23. **Ovarian Transplantation.**—In 1901 both tubes and the left ovary were removed from Storer's patient for an acute gonorrheal salpingitis of a month's duration. April 12, 1904, the remaining right ovary was freed and proved to be riddled with cysts, especially in its right half. The tubal stumps were about half an inch long. The right tubal stump was divided downward until the uterine cavity was laid well open. The ovary was then bisected from above downward, carrying the incision well down into the broad ligament, so that each half of the ovary retained at least some of its original blood supply. The cut surface of the distal half was then closed with catgut, leaving that half to function in case the other half died. The proximal segment of the ovary was then introduced into the cut in the uterine wall and lightly anchored in place with fine catgut, in such a way that most of its cortex projected into the uterine cavity. The uterine wall was then brought together over it and its pedicle, in which there was a fairly good sized artery, with deep and superficial layers of catgut. The pedicle was sufficiently long not to pull the fundus over to the right at all. A chronically diseased appendix was removed.

A month after the operation the patient menstruated in perfect comfort, more so than for three years. Storer saw her again in January, 1905. She had been menstruating regularly but for the last few months with increasing pain, and finding a mass to the right of the uterus, he opened her again and removed a shell representing the degenerated remnants of the piece of ovary left *in situ* and a peritoneal cyst the size of a child's fist. Storer examined the seat of the transplanted ovary with much care but could find nothing abnormal nor any trace of its pedicle, which may have been lost in the many adhesions present. She made a good recovery but did not menstruate for four months. She was then put on various emmenagogues and on May 25 flowed one day. In June, July and August she flowed normally. November 4 her physician wrote that she was pregnant. This putative pregnancy was sixteen months after the transplantation. Everything went as should a normal pregnancy till December 12, three and a half months after the last menstruation, when she passed with some hemorrhage a mass of detritus and the uterus rapidly decreased in size. Menstruation stopped entirely February, 1909; in May she was the picture of health but a nervous wreck and her life a torment, with hot flashes, eye ache and other symptoms of the premature menopause. Hysterectomy was done in February, 1911, in a western city and she died thirty-six hours later of a streptococcus infection.

26. **New Technic for Hare-Lip Operation.**—Ladd uses two pairs of clamps made on a suitable angle with fine teeth to prevent the skin or mucous membrane from slipping, and a slit for the introduction of a small knife to make the incision. The knife used is made double-edged like a Catlin, only very small and thin. These instruments are used in conjunction with an ordinary small pair of sharp-pointed metal dividers. The procedure of the operation is as follows: After the alveolar process has been restored in the usual manner, the desired height of the lip, minus the width of the vermillion border is determined with the dividers. This distance is then marked off on either side of the lip by pricking the lip with the sharp ends of the dividers at the points which are to form the lines of the incision. The lip and cheek are then freed from the alveolar process and superior maxilla on both sides until the fissure can be drawn together without tension. The clamps are then applied with the angles of the slits at the points A and C and the slits directed toward the points B and D. The knife is now introduced into the slit in the clamp and carried upward to the nose and downward through the border of the lip, making the incisions B A E and D C F. The clamps may now be removed and reapplied out toward the angle of the mouth to control hemorrhage. The edges of the incisions, which of necessity must be clean incisions of equal length, and consequently fitting each other, can now

be easily approximated, bringing the points B to D, D to C and E to F. This is done with one row of interrupted silk stitches, including all layers, but the skin tied inside, and another row of superficial approximation stitches of the same material, including the skin only, and tied outside.

Illinois Medical Journal, Chicago

January, XXVII, No. 1, pp. 1-80

27 Joint-Bodies from Within and from Without Present in Articulations Otherwise Apparently Normal. A. P. Heineck, Chicago.
28 Hyperthyroidosis. A. A. O'Neill, Chicago.
29 Goiter: Its Prevalence in Chicago. E. T. Olsen, Chicago.
30 Surgical Considerations of Thyroid. J. B. Haeberlin, Chicago.
31 Effects of Goiter and Results of Removal on Circulatory System. E. P. Sloan, Bloomington.
32 West Intranasal Partial Resection of Tear Sac for Dacryocystitis, Dacryostenosis, Phlegmon or Epiphora. J. S. Clark, Freeport.
33 Family Physician of Future. E. A. Cook, Alton.
34 Clinical Significance of Blood-Pressure and Its Relation to Longevity. A. L. Brittin, Athens.
35 Diagnosis of Intracranial Complications in Diseases of Middle Ear and Accessory Sinuses of Nose. J. C. Beck, Chicago.
36 Roentgen Ray Diagnosis. H. W. Grote, Bloomington.
37 Care and Treatment of Compound Infected Fractures. R. J. Bunch, Table Grove.
38 Indications for Use of Pituitary Extract. Report of Cases. H. L. Howell, Bloomington.
39 Common Causes of Slow and Difficult Labor. E. L. Brown, Bloomington.

Journal of Abnormal Psychology, Boston

December-January, IX, No. 5, pp. 297-368

40 Psychologic Feature of Precipitating Causes in Psychoses and Its Relation to Art. J. T. MacCurdy, New York.
41 Artificial Dreams and Lying. A. A. Brill, New York.
42 Psychopathology of Family. L. E. Emerson, Boston.
43 Few Dream Analyses. M. Solomon, Chicago.

Journal of Biological Chemistry, Baltimore

December, XIX, No. 4, pp. 445-538

44 *Catalytic Reactions of Blood. W. G. Lyle, L. J. Curtman and J. T. W. Marshall, New York.
45 Enzymes of Aspergillus Terricola. F. M. Scales, Washington, D.C.
46 *Studies in Endogenous Uric Acid Metabolism. G. W. Raiziss, H. Dubin and A. I. Ringer, Philadelphia.
47 Excretion of Creatinin by Human Individuals on Prolonged Creatin-Free Diet. A. I. Ringer and G. W. Raiziss, Philadelphia.
48 Effect of Acid on Permeability. W. J. V. Osterhout, Boston.
49 Solubility of Oxygen in Serum of Limulus Polyphemus L. and in Solutions of Pure Limulus Hemocyanin. C. L. Alsberg and W. M. Clark, Woods Hole, Mass.
50 Coagulation of Albumen by Pressure. P. W. Bridgman, Cambridge, Mass.
51 Distribution of Arsenic in Human Body. F. P. Underhill, New Haven, Conn.
52 Antagonism Between Acids and Salts. W. J. V. Osterhout, Boston.
53 *Estimation of Fat in Feces. F. C. Gephart and F. A. Csonka, New York.

44. **Catalytic Reactions of Blood.**—An investigation was made by Lyle, Curtman and Marshall of the chief factors involved in the benzidin test for occult blood. Their results with reagents covering a wide range of concentrations of benzidin acetic acid, and hydrogen dioxid, show that the sensitivity of the test was greatly influenced by the relative concentrations of these substances. Dilute solutions of benzidin are exceedingly sensitive to pure aqueous solutions of blood, and with these reagents, under the most favorable conditions, the authors were able to obtain decided tests with 1 c.c. of blood solution of a concentration 1 to 5 million. These reagents, however, are easily affected by inhibiting substances. By increasing the concentration of benzidin, the reagent becomes more resistant to inhibitors, but fails to

respond to the more dilute aqueous solutions of blood. The acetic acid serves merely to hold the benzidin in solution; an excess diminishes the delicacy of the reagent by increasing the speed of fading.

The hydrogen dioxid functions chiefly in two ways: First, it supplies the oxygen necessary for the reaction; second, it bleaches the blue color. Although a moderate excess of dioxid accelerates the reaction, it interferes with the delicacy of the test by increasing the speed of fading. The concentration of the hydrogen dioxid should be reduced to the minimum compatible with the production of a blue color which will reach its maximum intensity within five or six minutes. To obtain consistent results, water redistilled from glass should be used exclusively, and controls should invariably be made. It is imperative that the hydrogen dioxid be added last.

46. **Studies in Endogenous Uric Acid Metabolism.**—The uric acid elimination of ten individuals was studied by Raiziss, Dubin and Ringer. It was found that on a vegetable (meat-free) diet the uric acid output was considerably lower than was previously reported in the literature. It was also found that different individuals, under the same conditions of diet and rest, eliminate practically the same amount of uric acid per day. Work and high protein intake cause an increase in uric acid elimination. In changing the diet from a mixed to a vegetable and meat-free diet, at least a week must be allowed before the uric acid output will reach a constant level. The output during the first few days is higher, in all probability, because of an elimination of accumulated purin in the tissues of the body.

On placing two individuals on a practically nitrogen-free diet, which was at the same time strictly nuclein-free, after a vegetable diet period, the uric acid elimination dropped to about half of what it was on the vegetable diet (0.040 gm. per day). On giving milk, eggs and zwieback to the extent of 12 gm. of nitrogen per day to one of these, immediately following the nitrogen-free diet, the uric acid output rose but very slightly (maximum of 0.058 gm. per day). But when the vegetable diet was resumed, the uric acid nitrogen elimination rose again to its former level of 0.104 gm. per day. These findings suggest the possibility that the true endogenous uric acid output is really much smaller than has been found heretofore, and that in order to obtain it, the subject must be kept for a long time on a strictly purin-free diet and in a condition of absolute rest.

53. **Estimation of Fat in Feces.**—The steps of the method proposed by Gephart and Csonka may be summarized as follows: Weigh out finely powdered or well mixed moist sample. Saponify with KOH in alcohol (4 gm. of stick KOH and 20 c.c. of 95 per cent. alcohol). Dilute with 50 c.c. of water and acidify with HCl (20 c.c. of 20 per cent. in 5 c.c. portions). Shake out with ether and wash ether extract. Distill off ether and dry fatty acids. Take up with petroleum ether, filter and titrate with N/10 alcoholic KOH.

Calculation: $\frac{\text{c.c. N/10} \times 0.0297}{\text{Weight of substance taken}} \times 100$-per cent. tristearin.

Lancet-Clinic, Cincinnati

January 9, CXIII, No. 2, pp. 27-54

54 Relation of Focal Infection to and Bacteriology of Arthritis. E. C. Rosenow, Chicago.
55 Distinctive Advances in Orthopedic Surgery, Review of Recent Literature. R. B. Cofield, Cincinnati.
56 Hysterectomy from Viewpoint of General Surgeon. W. D. Haines, Cincinnati.
57 *Relation of Gastro-Intestinal Tract to Joint Disturbance and Value of Eliminative Treatment. W. A. Mowry, French Lick, Ind.

57. Abstracted in THE JOURNAL, Nov. 21, 1914, p. 1877.

Medical Record, New York

January 16, LXXXVII, No. 3, pp. 85-126

58 Scientific Knowledge Logically Applied to Acute Gonorrhea in Male Urethra. G. S. Peterkin, Seattle, Wash.
59 Vaccines in Relation to Mouth Infection. J. Head, Philadelphia.
60 *Are We Getting Proper Value from Our Plant and Expenditure for Tuberculous? E. S. McSweeny, Castleton Corners, Staten Island.
61 Occupational Factor in Diseases of Women. A. De Roulet, Chicago.
62 Some Ocular Manifestations of Aural Disturbances and Their Interpretation. J. A. Hagemann, Pittsburgh.
63 *Successful Use of Emetine in Control of Hemorrhage Following Nasopharyngeal Operations. J. Weinstein, New York.
64 Three-Bladed Uterine Curette. P. Romeo, Kansas City, Kan.

60. **Are We Getting Proper Value from Our Plant and Expenditure for Tuberculous?**—McSweeny's answer to the question is "No." He calls attention to the present state of affairs: An enormous number of tuberculous patients of all kinds and stages of disease and an annual expenditure on them of millions of dollars. Tuberculosis institutions bear all sorts of names and allege all sorts of objects, practically all house a medical and social hodge podge that bears small, if any, relation to the professions of their conductors. Anyone who can be proved to have a tuberculous or possibly tuberculous lesion, in he goes with the rest, without reference to the probable results. The highest type of case sets the standard, and the expenditure is the same for all. This McSweeny condemns.

The following classification and program he holds is the only one by which plant and expenditure can be made to yield its full value: 1. Cases of criminality, insanity, epilepsy, feeble mind, old age, permanent disability of other origin, alcoholism and vagrancy, complicated by tuberculosis, should not only not be treated in view of it alone, but the primary condition should be considered first and the tuberculosis regarded as a complication. This implies tuberculosis departments in institutions for these classes. 2. Cases of chronic disability, due to pulmonary impairment of tuberculous origin, should be kept in tuberculosis homes with infirmary service, to be retained there until death. 3. Cases of chronic tuberculosis without disablement should not be treated at all. Whatever the stage anatomically is immaterial. 4. There is among the many cases of tuberculosis a large fraction, early and late, who require treatment for their disease for varying, often long, periods, and are entitled to the best treatment that medical science knows, at the public expense, just as much as does the patient suffering from any other disease or injury; their interests shall not be compromised by the means apportioned being frittered away in a wholly illogical fashion; there are many kinds of tuberculosis, and we should not rob the patient who requires and will get results from treatment for the sake of those who will not, any more than we would hesitate to spend money on, or would take any less care of, or use any less effort to relieve, a case of sciatica, because there happened to be plenty of paralyzed persons to look after according to other standards. For those persons, that is, those definitely ill from tuberculosis, in an acute condition, including exacerbations and terminal stages in chronics, not comprehended in the previous exclusions, and for tuberculous persons suffering from other acute conditions, the tuberculosis sanatorium-hospitals and hospital-sanatoriums should be reserved. McSweeny believes that the cause of the present state of affairs is, first, the unfortunate tendency of physicians to regard the whole question of the classification of tuberculosis cases as settled when they tag the patient first, second or third stage, forgetting that other classifications are often more important, and second, of the artificial element in the antituberculosis propaganda now so wide-spread.

63. **Use of Emetin in Control of Hemorrhage Following Nasopharyngeal Operations.**—Twelve cases in which emetin was successfully employed to control or prevent hemorrhage during and after operations on the nose and throat are cited by Weinstein. In each instance ½ grain emetin hydrochlorid was given hypodermatically.

Michigan State Medical Society Journal, Grand Rapids

January, XIV, No. 1, pp. 1-74

65 Some Impressions of Work in London. C. H. Baker, Bay City.
66 Case of "Squirrel Plague" Conjunctivitis in Man. D. T. Vail, Cincinnati.
67 Inferior Turbinate; Its Flap Resection to Reduce it When Obstructive. O. T. Freer, Chicago.
68 Rhinitis—Acute and Chronic. L. J. Goux, Detroit.
69 Physiologic Physics in Relation to Eye and Ear. A. F. Burdick, Lansing.

70 Conservation of Vision. E. W. E. Patterson, Grand Rapids.
71 Bacteriology and Bacteriotherapy of Upper Air Passages. A. Odell, Detroit.
72 Ear Complications in Infections from Zymotic Fevers. G. A. Bulson, Detroit.
73 Hemorrhage from Ear. W. E. Newark, Charlotte.
74 Aural Conditions Following Contagious Disease. J. M. Robb, Detroit.
75 Intranasal and Pharyngeal Infections in Their Relation to Eye and Ear. E. P. Wilbur, Kalamazoo.
76 Acute and Chronic Sinusitis of Nasal and Pharyngeal Origin. F. N. Smith, Grand Rapids, Mich.
77 Some Points in Differential Diagnosis of Cerebellar Abscess and Cerebellar Lues. R. B. Canfield, Ann Arbor.
78 Osteitis Fibrosa. Report of Case. J. Van Zwaluwenburg, Ann Arbor.
79 Paraplegia Dolorosa Terminated by Aplastic Anemia—Anemic Changes in Spinal Cord. J. W. Sherrick, Ann Arbor.
80 Case of Myelogenous Leukemia Treated with Benzol and Roentgen-Ray. H. B. Schmidt, Ann Arbor.
81 Resection of Gasserian Ganglion for Trifacial Neuralgia Complicated with Facial Palsy. W. A. Hoyt, Ann Arbor.
82 Value of Two Stage Operation for Senile Hypertrophy of Prostate. H. H. M. Malejan, Ann Arbor.
83 Case of Multiple Sclerosis. C. W. Hitchcock, Detroit.
84 Case of Tabes Dorsalis with Unusual Therapeutic Result. T. Kingmann, Ann Arbor.
85 Case of Syphilis in Primary Stage with Involvement of Central Nervous System. U. J. Wile, Ann Arbor.
86 Clinical and Anatomic Study of Case of Dementia Praecox. A. M. Barrett, Ann Arbor.

Military Surgeon, Chicago

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87 General Medico-Military Observations in Late Balkan Wars. C. S. Ford, U. S. Army.
88 Drill Regulations and Service Manual for Sanitary Troops U. S. Army, 1914. G. M. Blech, Ill. N. G.
89 Indian Saint John Ambulance and European War. R. J. Blackham.
90 Best Training for Hospital Corps for Fleet. F. E. McCullough, U. S. Navy.
91 Evolution of Sanitary Service in National Guard and Some Defects in Its Administration. F. O. Waage, Pa. N. G.
92 Sphere of Activities of Medical Officers Aboard Ship. C. M. Oman, U. S. Navy.
93 Ehrlich's Arsenic in Treatment of Syphilis in Military Service. J. R. Church, U. S. Army.

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94 Modernized Proctology. S. G. Gant, New York.
95 Prevention and Treatment of Suppurative Ophthalmia. C. Graef, New York.
96 Neurotic Disturbances after Accidents in Relation to Workman's Compensation. T. A. Williams, Washington, D. C.
97 Practical Prevention of Tuberculosis. M. E. Lapham, Highlands, N. C.
98 Some Considerations of Heredity. S. D. Ingham, Philadelphia.
99 For Better, For Worse. C. H. Duncan, New York.
100 An Economic View of Disease. B. F. Rea, Lafayette, Ala.
101 Practice in Mexican Mining Camp. W. Hartz, Philadelphia.
102 Case of Xanthin Calculus. J. Rosenbloom, Pittsburgh.

Oklahoma State Medical Association Journal, Muskogee

January, VII, No. 8, pp. 235-270

103 Bone Regeneration and Repair. J. F. Kuhn, Oklahoma City.
104 Acute Osteomyelitis. M. Smith, Oklahoma City.
105 Modern Treatment of Fractures. J. W. Riley, Oklahoma City.
106 Fistula in Ano. A. A. Will, Oklahoma City.
107 Pulmonary Infections. R. H. Fox, Altus.
108 Physician and Drug Habit. C. W. Fisk, Kingfisher.

Ophthalmic Record, Chicago

January, XXIV, No. 1, pp. 1-54

109 Gonorrheal Iritis as Manifestation of Old Latent Gonococcemia, Diagnosed by Complement-Fixation Test—Treatment with Bacterins. W. Reber and G. A. Lawrence, Philadelphia.
110 Spheric Aberration: Importance of Its Correction in Applied Refraction. A. B. Mason, Waycross, Ga.
111 Salvarsan in Ophthalmology. E. Stieren, Pittsburgh.
112 Case of Keratoconus Cured with High Frequency Spark. E. R. Carpenter, El Paso, Tex.
113 Melanosis of Conjunctiva. Report of Case. R. L. Randolph, Baltimore.
114 Method of Destroying Lachrymal Sac in Chronic Dacryocystitis. H. Gifford, Omaha.

Public Health Journal, Toronto

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115 Trend of Advance in Town Planning and Child-Welfare within Empire. J. G. Adami and H. MacMurchy, Toronto.
116 Enumeration of Bacteria in Milk. J. Race, Ottawa.

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117 *Boiling Water Injections into Thyroid for Hyperthyroidism. M. F. Porter, Fort Wayne, Ind.
118 *Diagnosis and Treatment of Osteomyelitis. M. B. Clopton, St. Louis.
119 *Pylorectomy and Partial Gastrectomy in Treatment of Gastric Ulcer. W. L. Rodman, Philadelphia.
120 *Transplantation of Ovaries. T. Tuffier, Paris.
121 Goiter in Children. C. G. Buford, Chicago.
122 Three Cases of Fibrosclerosis of Penis Treated by Roentgenization without Improvement. C. A. Waters and J. A. C. Colston, Baltimore.
123 Intra-Abdominal Dynamics and Mechanical Principles Involved in Cause of Backward and Downward Displacements of Uterus. G. H. Noble, Atlanta, Ga.
124 *Experiments on Transplantation of Gastric Mucous Membrane. W. Doolin, Dublin.
125 *Dislocation of Semilunar Bone. Report of Eight Cases. R. W. Runyan, Ancon, C. Z.
126 Benign Tumors of Stomach. A. M. Campbell, Grand Rapids, Mich.
127 *Cancer of Breast. W. S. Handley, London.
128 Bilateral Congenital Caput Obstipum. A. H. Morse, San Francisco.
129 Series of Filiform Appendices. H. K. Bonn, Indianapolis.
130 *Modified Incision for Approaching Gall-Bladder. L. L. McArthur, Chicago.
131 Pituitary Extract in Marginal Placenta Praevia. Report of Case. J. Gardiner, Toledo, O.
132 Surgery of Cleft-Palate. J. Berry, London.
133 Principles which Govern Ultimate Results of Harelip and Cleft-Palate Operations. G. V. I. Brown, Milwaukee, Wis.
134 Factors of Safety in Cleft-Palate Surgery. J. R. Eastman, Indianapolis.
135 Treatment of Cleft-Palate. F. W. Goyder, Bradford, England.
136 Late Results of Cleft-Palate Operations. T. W. Brophy, Chicago.

117. **Boiling Water Injections for Hyperthyroidism.**—Further experimental and clinical observations have convinced Porter that injections of boiling water into the gland should be substituted for the so-called medical treatment in patients with small thyroids and moderate symptoms of hyperthyroidism. This method is also peculiarly well adapted to the treatment of patients with moderate or severe symptoms and relatively small glands and especially to cases wherein the hyperplasia is circumscribed. It is therefore well adapted to the treatment of patients who have had a lobectomy done and are still suffering from symptoms of hyperthyroidism with hypertrophy of the remaining lobe. Patients with large goiters and extreme symptoms of hyperthyroidism should be treated with the injections until they become safe surgical risks and then have the gland removed. Boiling water injections are not recommended in non-toxic goiter. In such cases, as in patients with large goiters and toxic symptoms, but who are good surgical risks, thyroidectomy should be the chosen method of treatment. In substernal hyperactive goiters the removal of which would be hazardous, boiling water injections under guidance of the eye should be tried.

118. **Diagnosis and Treatment of Osteomyelitis.**—Clopton emphasizes the fact that the earliest symptom of osteomyelitis is pain in the shaft of the long bone (usually near the end), accompanying septic symptoms. In a few cases of profound sepsis, pain sense is lost. Soon there is swelling of the shaft near the joint, frequently at the epiphyseal line. At this stage the joint is not involved. Septic arthritis usually is an intense infection, with less pain and several joints involved. Tuberculosis is a chronic disease that involves the epiphysis, and syphilis may give a similar picture. The Roentgen ray is of great value, except at onset of the infection. The treatment in the acute stage is to drain to the center of the medulla by removing a narrow channel of bone along one side of the shaft. Gutta-percha tissue is used to drain this channel. The medulla should never be "cleaned out," as it is needed for the endosteal regeneration.

In the subacute or chronic stage of osteomyelitis of the femur or humerus, treatment is planned to allow the shaft to heal after efficient and sufficient drainage. If sequestra have formed, these are removed, and the cavity wiped out with gauze. It is best not to curet these cavities or to attempt to sterilize with antiseptics. The iodoform beeswax of Mosetig-Moorhof is introduced into the cavity to act as a drain, which is partially absorbed and partially extruded. Gauze should never be used as a drain in either the acute

or chronic stage. When one bone of the forearm or leg is involved (and at times the humerus), the shaft is removed subperiosteally about five or six weeks after draining the acute infection. The periosteum at this time should show a sufficient thickening to cast a shadow on the photographic plate. After removing the shaft the periosteum is sutured into a ribbon joining the ends of the remaining bone, and from this periosteum new bone is formed to replace the diseased shaft. In the meantime the other bone supports the limb in its proper position. In about four months the new bone can support weight. The forearm can be useful in less time. In a small proportion of badly infected cases, bone does not regenerate completely after removal of the shaft, and bone transplantation has to be resorted to after healing is obtained. Chronic localized osteomyelitis cavities in the cancellous bone may be treated by healing under blood-clot, or drainage with Mosetig-Moorhof wax, after the bone detritus has been removed with rongeur and gauze.

119. **Pylorectomy and Partial Gastrectomy in Treatment of Gastric Ulcer.**—If the ulcer, or ulcers, are situated at or near the pylorus, as they are in about 80 per cent. of all cases, and the pyloric end of the stomach and proximal portion of the duodenum can be easily mobilized, Rodman claims that pylorectomy which gets rid of the existing ulcers, and prevents future ones to a large extent, removing, as it does, four-fifths of the ulcer-bearing area, is certainly the operation of choice. The frequency with which hemorrhage, perforation and cancer, especially the latter, follow gastro-enterostomy, show it to be wholly inadequate. Moreover the radical operations of excision and pylorectomy are only slightly more dangerous while far more beneficent in every way than gastro-enterostomy.

If, however, the converse obtains, the stomach and duodenum being bound down by adhesions to adjacent viscera, such as the pancreas, liver, gall-bladder, transverse colon, etc., simple gastro-enterostomy, the anastomosis being made about the middle of the stomach, should be practiced. If the symptoms are not relieved within a reasonable time, then pylorectomy may be performed more safely. Before such a step is taken the operator should be assured that the gastro-enterostomy is patent and functionating. The operation can also be done in two stages in those patients not in good condition, whether it be from hemorrhage, anesthetic, or other cause. It is often best to perform pylorectomy for cancer in two stages, and practically the same is true in ulcer operations, but it will be much less frequently the case.

Gastric ulcers, duodenal as well, are more frequently multiple than is appreciated. With the number and chronicity of ulcers potential dangers are increased, and radical measures are more urgently called for. Ulcers away from the pyloric end, that is, occupying the expanded four-fifths of the stomach, should preferably be treated by partial gastrectomy or removal of the ulcerated area. Although such ulcers rarely undergo cancerization, they frequently bleed and perforate, both of which dangers are increased by the freer movements of this portion of the stomach during respiration. Moreover, on this account protective adhesions are less apt to form about them, if we except the lesser curvature, which is relatively immobile. If simple excision is practicable, it should be done, as it produces a smaller mortality (1.7 per cent.) than gastro-enterostomy. In some cases it may be wise, though it is not usually so, to supplement excision by gastrojejunostomy. It all depends on the location and size of the ulcer and whether or not the stomach can presumably carry on its functions without irritating, stretching, or otherwise interfering with the line of suture.

120. **Transplantation of Ovaries.**—During the last eight years, from Nov. 15, 1906, to July 15, 1914, Tuffier has performed 204 operations. He performed homografting twenty-four times under the most favorable circumstances, but it did not prove successful. He performed seven heterografting immediately after the removal of an ovary or after the gland had been preserved in cold storage from one hour to forty-four days, and the operation has never given a single good functional result. He transplanted an ovary from one young woman to another who presented, after the removal of ovaries and tubes very severe symptoms simulating change of life. There was every chance of success, for the patients were of the same age, of the same complexion, and had the same color hair. The disturbances were the same after as before the transplantation, the patients had all the symptoms of menopause, and after some months the ovary gradually decreased in size.

Tuffier performed 145 autografting operations. Two circumstances under which the operations were performed are cited: First, total hysterectomy and transplantation of one or both ovaries, in whole or in part. Eighty-four operations were performed in this. Second, in salpingitis, Tuffier leaves the uterus in place, removes the two adnexa, and then grafts either one or both ovaries. Sixty-five operations have been performed following this technic. After the transplantation, in which the uterus is left in place, the ovary remains unaltered for three or four months and seems to lie dormant. Sometimes it is a little tender, and the patient has all the symptoms of change of life. But after a while the ovary becomes active, enlarges, and is sometimes painful for five or six days, whereon all symptoms subside and menstruation reappears. Generally the congestion of the ovary precedes menstruation by five or ten days. On the same day when menstruation has commenced all the symptoms of menopause disappear entirely. After a month or so ovulation again takes place.

Of the sixty-five patients on whom Tuffier performed autografting operations without hysterectomy he has interviewed thirty-seven from one to six years after operation and thirty-two had their periods regularly. In the five cases which did not have regular periods, two important points were noticed; first, the patients were either more than 40 years old, or second, they were septic cases in which it was necessary to dip the graft into tincture of iodin. Certain patients have the change of life sometimes from one to three years after the operation. Sometimes the monthly flow is irregular. The results are the same whether one or two ovaries are grafted. Tuffier did twenty-eight autografts of both ovaries and has interviewed later twenty of these patients, nineteen of whom had regular menstruation. He has done thirty-seven autografts of one ovary and from this series seventeen patients were seen later and thirteen had regular periods. Of those having amenorrhea, one was over 40 years old. Tuffier concludes that ovulation and the internal secretion are not so important as is generally believed. From all these facts he believes that every month the female creates by internal secretion, a chemical substance; when this substance exists in the blood in sufficient quantity it acts on the ovary, which modifies it, and menstruation is consequently produced by this modified internal secretion and the secretion is eliminated with the flow. He has been able to localize this chemical substance in the blood. It exists in the serum, because he can produce menstruation by injecting defibrinated blood. If menstruation does not occur, then the chemical substance is retained in the circulation and causes an auto-intoxication.

124. **Transplantation of Gastric Mucous Membrane.**—Doolin's experiments showed that the autoplastic transplantation of gastric mucosa in dogs is feasible and leads to definite cyst formation. These cysts are lined with a single layer of cubical epithelium arising from epithelial islets which have survived the general necrosis of the graft. The graft depends for its nutrition on the blood-supply conveyed to it by adhering omentum. The size of the cyst so formed varies directly with the length of time since the operation. Tubular grafts of hollow abdominal mucosal tissue depend for their success on their muscularis—the canal being later lined with epithelium growing in from the surroundings.

125. **Dislocation of Os Semilunaris.**—Runyan claims that closed reduction can be accomplished in about one-half of the recent cases of dislocation of the semilunar bone by the method of hyperextension followed by flexion while counter-pressure is maintained over the dislocated semilunar. Prompt diagnosis and treatment are essential in obtaining

good results. The more speedily the dislocation is recognized and reduced, the better the result. Closed reduction should always be tried, irrespective of the length of time the dislocation has existed. Closed reduction being impossible, an anterior incision should be made and the dislocation reduced. Failing in this, it is necessary to excise the semilunar, but excision should be done only as a last resort.

127. **Cancer of Breast.**—A study of the secondary deposits which are easily accessible to observation, namely, those in the skin and bones, showed Handley that these secondary deposits, commencing near the primary growth, spread in a centrifugal manner from it. While in extreme cases this centrifugal spread may involve the greater part of the area of the body, the arms below the elbows and the legs below the knees are never the seats of such deposits. Handley began to make microscopic sections of long centrifugal strips of the skin and subcutaneous tissue, radiating from the primary growth. In them, at points near the growth, isolated nodules of secondary growth could be seen. Farther out at a varying distance up to 10 inches from the primary growth, he found a narrow and elusive zone a few millimeters wide in which the lymphatic vessels were choked by cancer-cells. Beyond it the tissues were normal. This zone was met with in each of the radiating strips, and it constitutes the true growing edge of breast cancer. It may be found at any distance up to 2 feet from the primary growth. The detection of this microscopic growing edge Handley claims is the foundation stone of the permeation theory of dissemination.

These facts he explains as follows: The immense proliferative pressure of the epithelium at the primary focus forces cancer-cells into the small lymphatics, along which they grow in continuous lines. This process which Handley has called permeation is the master-process of dissemination. Reaching the lymphatic plexus into which the breast in the first instance drains, permeation involves a larger and larger circular area of this plexus, filling up its channels with lines of cancer-cells and sending offshoots into the adjoining muscular and cutaneous layers. Sooner or later cancer-cells are thus brought into the serous cavities and rapid visceral dissemination occurs.

The main operative principles deduced from the permeation theory by Handley are: First, the area which demands widest removal is that in which the growing edge is situated, namely, the deep fascia, in which is found the lymphatic plexus which forms the highway for the spread of the disease. Second, the area of deep fascia removed must be roughly circular in outline, since permeation spreads with approximate equality in all directions from the primary growth. Third, the primary growth must always be the center of the area of fascia removed. Failure to observe this rule accounts for many recurrences. Fourth, the skin and muscles being secondarily involved over a smaller area, and less widely than the fascia, the removal of a smaller area of these tissues will suffice. The removal of the embolically invaded regional lymphatic glands is, of course, essential.

130. **Modified Incision for Approaching Gall-Bladder.**—In those cases, then, in which a perfectly obvious gall-bladder drainage, stone removal, or ectomy is indicated, McArthur urges to incise the posterior sheath parallel with the tendinous fibers of the transversalis, namely, nearly transversely. To select the level for its incision about an inch above the free end of the gall-bladder, making a small opening first for confirmation of the diagnosis, by digital exploration. The incision can then be enlarged to the middle line and as far laterally as seems essential. The transversalis (posterior sheath) can, with the gloved fingers, be separated from the internal oblique with ease. When the necessary interference with the gall-bladder has been made and the latter dropped back, the cut margins of the transversalis are seen to lie in contact and its respiratory action noted as continuing normally. Then the cut edges can be whipped together with catgut sutures under absolutely no tension. The support thus given by the uncut transversalis renders tension stitches wholly unnecessary and makes easy the closure of the anterior sheath and skin.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

January 2, 1, No. 2818, pp. 1-56

1 Principles and Practice of Localization of Foreign Bodies by Roentgen Rays. J. M. Davidson.
2 Localization of Bullets and Shell Fragments. F. Hermaman-Johnson.
3 Rapid Method of Localization by Roentgen Rays. K. W. MacKenzie.
4 *Acute Hemorrhagic Pancreatitis. F. Eve.
5 Grey Hair and Disease Limited to Nasolabial Area. G. L. Creatle.

Lancet, London

January, 1, No. 4766, pp. 1-58

6 *Acute Hemorrhagic Pancreatitis. F. Eve.
7 Experiences of Shell Wounds in Present War. A. W. Sheen.
8 Roentgen Rays in War Time. E. W. H. Shenton.
9 Case of Spontaneous Recovery from Detachment of Retina. H. L. Eason.
10 *Amputations in War Surgery. M. Fitzmaurice-Kelly.
11 Two Cases of Cicatricial Stenosis of Larynx. H. Barwell.
12 Leper Houses and Medieval Hospitals. C. A. Mercier.

4 and 6. **Acute Hemorrhagic Pancreatitis.**—An excellent review of this subject is given by Eve. He states that clinical experience bears out the conclusions that stasis and infection are the main elements in the causation of acute pancreatitis, and these are most commonly brought about by cholelithiasis. Egdahl, in an analysis of 105 cases, found that in 44 (42 per cent.) the disease followed gall-stones or suspected gall-stones. But in only three of these cases was the stone in or near the ampulla. In 44 cases of Körte cholelithiasis existed in 21 (47 per cent.) and in 16 consecutive cases analyzed by Dietrich cholelithiasis was found at the operation or necropsy in 8. Calculi occupied the common bile duct only twice, and in both of these they were small and not impacted. Dietrich states that in his cases gall-stones were certainly excluded only three times (18.75 per cent.).

At the London hospital during the five years 1907 to 1912 there were eleven necropsies on cases of acute hemorrhagic pancreatitis. Gall-stones were present seven times (63.6 per cent.), and a round worm occluded both pancreatic ducts in an eighth. In only one of these cases did the stone occupy the ampulla. In the remaining six cases the calculi were in the gall-bladder and were invariably multiple and small. In two cases there was a duodenal ulcer, and in one of these a constriction of the common bile duct with dilatation of the pancreatic duct was noticed; therefore gall-stones or obstruction at the papilla existed in nearly 82 per cent. of the cases. The duct of Wirsung showed evidence of stasis of secretion, or of infection in seven cases out of the eleven. It may be observed that a true estimate of the causes at work is more likely to be obtained from necropsies than from operations performed under conditions of grave illness, when the condition of the patient may preclude a careful examination of the bile passages. The exact mechanism by which the pancreas is infected evidently varies. The figures quoted indicate that the direct regurgitation of infected bile into the duct of Wirsung, owing to the impaction of a small calculus in the ampulla, occurs only in a small proportion of cases—about 20 per cent.

Eve analyzed forty cases of acute pancreatitis with reference to the symptomatology. Over one-half had premonitory symptoms of varying intensity. These consisted of attacks of pain in the upper abdomen, or occasionally over the abdomen generally (16 per cent.). The premonitory attacks of pain were in a like proportion of cases (16 per cent.) referred to the right side of the upper abdomen. In many instances the pain resembled and might be referred to cholelithiasis, and in a few to duodenal ulcer. But a fair proportion of patients shown subsequently to have gall-stone disease complained of no previous symptoms. A few cases gave a history of indigestion and flatulence. The symptoms accord with the symptoms of the group of acute abdominal crises, and closely resemble those of perforation of gastric and duodenal

ulcer, of the gall-bladder, or the appendix. Many cases have been mistaken for acute intestinal obstruction. The onset is sudden, with very severe pain in the epigastrium, persistent vomiting, usually constipation, tenderness, fullness and resistance in the upper abdomen, and gradually increasing distention; the pulse is rapid and weak, the temperature lower than the pulse-rate, and not infrequently subnormal with collapse. The one symptom which gives the most probable insight into the condition is tenderness across the epigastrium and resistance over the pancreas. The most distinctive sign is epigastric peritonitis, with subsequent swelling in the left lumbar region. There being no pathognomonic sign the diagnosis is admittedly difficult and uncertain.

In the forty cases analyzed, vomiting was present in 80 per cent.; was often severe and incessant; constipation existed in 25 per cent., and was only marked in five cases. Diarrhea was present in three cases, but in one of these symptoms had existed fourteen days. Pain was almost constant, and in 50 per cent. was situated in the epigastrium or upper abdomen. In the other cases it was localized in the right hypochondrium, the right side of abdomen, or right iliac fossa; in others on the left side or left iliac fossa. Tenderness had much the same distribution as the pain. Distention existed in half of the cases. A swelling was observed in only seven (17.5 per cent.), twice in the right hypochondrium (in one of these being a distended gall-bladder), thrice on the right side of the abdomen or to the right of the umbilicus, once on the left side of the abdomen and once below the umbilicus. Cyanosis, sometimes spoken of as a characteristic sign, was only present twice; one was an acute case of twenty-four hours' duration, while in the other the symptoms had lasted fourteen days. Glycosuria was once noted, a trace of sugar being found in one of Dietrich's sixteen cases. It existed in eight of Körte's forty-four cases. One patient of Körte developed diabetes one and a half years after extensive necrosis of the pancreas, and died eight years subsequent to the operations. The general condition of patients with acute pancreatitis is indicative of an acute toxemia. Cammidge's reaction is of no definite value in the diagnosis of acute pancreatitis.

10. **Amputations in War Surgery.**—The method Fitzmaurice-Kelly advocates consists in a simple circular division of all the tissues, including the bones, at the same level, and that level the lowest possible. The skin is divided by a circular sweep, the muscles are divided at the level to which the skin retracts, and the bone is then sawn at the same level. The bleeding points are secured and tied, the nerves pulled down and cut short, and a dressing is then applied to the raw surface of the stump. The advantages claimed for the method are: 1. Economy of tissue. The amputation is performed at the lowest level at which a flap could be cut, or even lower, and all recoverable tissue is thus preserved. 2. It is applicable to otherwise hopeless cases, such as wounds, or gangrene at the root of the limbs, and in these cases carries a much better prognosis than disarticulation at the hip- or shoulder-joint. 3. It is very rapidly done, and there is very little shock. 4. The surface from which septic absorption can occur is the least possible, and the drainage is free. 5. The nutrition of the stump is unimpaired; in this respect its advantage over a flap amputation is obvious. 6. It is so simple that it is within the range of everyone, and does not need an experienced surgeon for its performance.

Beiträge zur Klinik der Tuberkulose, Würzburg

November, XXXIII, No. 1, pp. 1-110. Last indexed January 9, p. 184.

13 Theory, History and Present Status of Artificial Pneumothorax. K. Dluski.
14 *Tuberculosis of Male Genital System. M. Simmonds.
15 Early Diagnosis of Pulmonary Tuberculosis. (Inspektion, Palpation, Perkussion und Auskultation bei der Frühdiagnose der Lungentuberkulose.) F. M. Pottenger (Los Angeles).
16 *Fatal Air Embolism in Deformed Lung in Replenishing Artificial Pneumothorax. A. Mayer.
17 *Exophthalmic Goiter Symptoms with Tuberculosis. (Basedow und Tuberkulose.) Schinzinger.

14. **Tuberculosis of Male Genital Organs.**—Simmonds published an article on this subject thirty years ago, and experience since has confirmed what was scarcely believed then, that the primary infection might be in the kidney and the genital organs be only secondarily affected. In 105 cadavers he found the genital system alone involved, but in 95 there were also tuberculous processes in the kidney or bladder. The prostate seemed to have been first attacked in 50 per cent.; the seminal vesicles or epididymis in about 25 per cent. each. The usual age is from 30 to 60; tuberculosis of the female genital organs develops generally in the first to the fourth decades. Evidences of healed tuberculous processes in the prostate and seminal vesicles are extremely rare while traces of healed tubercles are found comparatively frequently in the testicles. The prognosis of genital tuberculosis in men is grave, especially when the seminal vesicles are involved. The greatest danger is from secondary tuberculous meningitis and miliary tuberculosis; a third of the men with genital tuberculosis succumbed to this complication. He found evidences of progressive tuberculous processes in the intra-abdominal parts of the genital system in 20 men who had been previously castrated for tuberculous epididymitis. Mere castration alone therefore cannot be regarded as adequate treatment for tuberculosis of the male genital system.

16. **Fatal Air Embolism in Inducing Artificial Pneumothorax.**—The trouble in the case described by Mayer, with illustrations, was due to a deformity of the lung, an abnormal peak projecting at one point and adherent to the pleura. By an unfortunate chance the needle perforated this protruding process and thus permitted air to get into a vein. The patient was a robust man and this was the fourth time the gas had been replenished. There had been no by-effects before. The injection of gas was proceeding regularly the last time and about 250 c.c. of nitrogen had been injected, when the patient drew an unusually deep breath. This pulled the needle a little to one side and the man collapsed as if struck by lightning. Under artificial respiration, oxygen and tracheotomy the cyanosis subsided but consciousness did not return and the heart beat gradually died out by the end of the third hour. Necropsy revealed the surprising fact that the greater part of the supposed tuberculous changes in the lung were of syphilitic origin. The tuberculous process was of comparatively minor importance although the sputum had contained tubercle bacilli and the Wassermann test had elicited a negative response.

17. **Exophthalmic Goiter and Tuberculosis.**—Schinzinger found a tendency to goiter in 355 of 521 tuberculous inmates of the Luisenheim sanatorium in his charge. Only 191 of the 355 in this group showed any symptoms suggesting exophthalmic goiter, while symptoms of this kind were evident in 89 of the 166 cases with an apparently normal thyroid. There were only 5 in the 521 with pronounced exophthalmic goiter, but among the patients with tuberculosis in its first stage some of the symptoms characteristic of Basedow's disease were comparatively common, especially the unstable pulse, slight or moderate protrusion of the eyeballs, tremor and angioneuroses. His conclusion is, however, that these symptoms must be credited to the tuberculosis.

Berliner klinische Wochenschrift

December 14, LI, No. 50, pp. 1905-1928

18 Opium and Its Alkaloids. (Neues über alte Opiumalkaloide.) J. Pohl.
19 *Suture of Blood-Vessels Injured in War. (Kriegschirurgische Erfahrungen über Blutgefässnaht.) E. Jeger.
20 *A Cholera Camp. (Seuchenerfahrungen und Seuchentherapie im Feldzuge 1914.) R. Rauch.
21 Resemblance between Typhoid, Typhus, Relapsing Fever and Malaria, Alone or Superposed. (Ueber die Aehnlichkeit der klinischen Krankheitsbilder von Infektionskrankheiten.) L. Riess.
22 *Tardy Suppuration in the Thyroid after Typhoid. (Zur Kenntnis der posttyphösen Strumitis.) E. Melchior.

19. **Suture of Vessels in War Wounds.**—This article describes experiences in the fortress of Przemysl at the time besieged by the Russians. The article was sent out from the belcaguered fortress by aeroplane, *Fliegerpost*, and was duly

received by the publishers. Jeger reports the details of his eight cases; in six any attempt to ligate the injured vessel would unquestionably have been followed by gangrene. The suture saved the limb in four in this group. The operation came too late in three of the other cases, and in another the vein had to be stretched so much to suture it that it gave way later. In this case the vein should have been patched out with a segment cut from another vein.

He gives an illustration of one case in which the arm had been shot at the junction of the upper and middle thirds, fracturing the bone and severing the soft parts until the arm hung only by a narrow bridge of the skin and muscle on the outer side. This arm was cold, anemic, no pulsation, when the patient was first seen two hours after the injury. During the interval a tourniquet had been applied above. The brachial arteries and veins and the median and ulnar nerves had been severed and each vessel was united by an end-to-end suture, as also the vena basilica. Stimulants were required as the pulse was imperceptible on both sides after the operation and the general condition was discouraging. By the second day the young man began to improve, but there was slight fever every night for two weeks and the pulse on the operated side was still weak and intermittent. By the end of the month sensation in the arm returned and under electricity and exercise he regained the functional use of his arm to such an extent that clinically normal conditions may be anticipated before long. Jeger knows of only one similar case on record, Jianu of Bucharest having reported saving an almost entirely severed arm in this way. In Jeger's case the injury was from a gun discharged accidentally close to the arm.

20. **Experiences with Cholera at the Front.**—Rauch relates how he was sent to a village of seventeen houses in which 480 men with cholera had been collected for five days. He found them lying on wet straw in rain-soaked tents, with from ten to twelve deaths a day. He at once took possession of the five largest houses, sending the inmates to their neighbors, and had the villagers bring dry straw and hay, and the cholera patients were brought into these houses. They lay with heads to the wall and the rooms were kept hot day and night. There was very little bolus alba and prepared serum on hand, so the main reliance had to be on keeping the men warm, applying moist heat systematically to the abdomen, giving the drugs at hand in turn, first tannin, then opium, and the third day a little bolus alba. Tea and a little brandy were all that was allowed the first day, then gruels of various kinds were given, especially oatmeal gruel with a little brandy. Later a little white bread was added. There were sometimes as many as 1,000 a day of cholera sick or suspects, but the mortality averaged only two a day. When the place was abandoned all the vessels were boiled, all the firearms, cartridge belts, etc., soaked in a solution of phenol, the rooms sterilized with formaldehyd and whitewashed before they left, the villagers gladly aiding to expedite their departure.

22. **Tardy Post-Typhoid Suppuration in the Thyroid.**—Melchior reports the case of a man of 52 whose mother and grandmother had goiter and the man himself had always had a very large neck. At 43 he had typhoid and during the nine years since actual goiter had developed, but without tenderness or pain. During the last six months the neck measured 47 cm., about 18½ inches, and the breathing was interfered with, so the thyroid was resected. It was found calcified in part and in the center an old abscess containing typhoid bacilli in pure culture. Gali has recently reported a somewhat similar post-typhoid case in which the interval was twenty-one years. It is characteristic of these torpid abscesses following typhoid that they do not develop until the febrile stage is past, as he shows by various examples. The organism by that time has been relatively immunized which explains the benign character of this type of abscess and also the lack of operative infection although the abscess in the thyroid, spleen or elsewhere was accidentally opened in the course of the operation in several instances. Neither the pleura nor the peritoneum displayed any irritation afterward.

Jahrbuch für Kinderheilkunde, Berlin

December, LXXX, No. 6, pp. 561-650

23 A Form of Congenital General Dropsy. (Zur Kenntnis der sogen. foetalen Erythroblastose.) H. Chiari.
24 *Filling Cavities after Bone Operations. (Zur Abkürzung der Heilungsdauer nach ausgedehnten Nekrotomien.) C. Bayer.
25* Bronchopneumonia Simulating Croup. E. Suñer.
26 Disturbances of Circulation in Acute Alimentary Disturbance in Infants. (Zirkulationsstörungen bei akuten Ernährungsstörungen der Säuglinge.) A. Czerny.
27 Symmetrical Gangrene in Children. (Beitrag zur Raynaudschen Krankheit im Kindesalter.) V. Lederer.
28 Pathology and Treatment of Transitory Fever in the New-Born. I. Peteri.

24. **Filling Cavities after Bone Operations.**—Bayer discusses the various methods that have been adopted for filling bone cavities after operation, and concludes that the simplest and best one is to trim the sides and edges of the bone forming the cavity, so that a smooth and uniform trough will result, and then fold in the skin and periosteum to line it throughout except where the turned-in flaps of soft parts do not quite meet in the center. A roll of iodoform gauze is sutured to fit into the long groove over the turned-in soft parts. This exerts pressure on the skin and periosteum flaps and forces them down to fit closer against the bone beneath and thus adapt themselves more accurately to the cavity. It also aids in hemostasis. A compression bandage is placed over this and left in place for two weeks. The periosteum rapidly forms new bone to fill in the cavity. How completely this is done is shown by five Roentgen pictures from typical cases. The time required for healing is reduced to about half of what it is with ordinary tamponing or other modes of treatment.

25. **Bronchopneumonia Simulating Croup.**—Suñer describes six cases with pronounced symptoms of diphtheric laryngeal stenosis but which proved by the later course or at necropsy to be merely bronchopneumonia. He finds that symptoms of laryngeal stenosis, very similar to those caused by diphtheria, may be induced by inflammation of the bronchi alone. Such inflammations may be caused by various bacteria, the diphtheria bacillus and staphylococci, such cases also may follow measles. The larynx is involved mainly in a mechanical way. In the cases that came to necropsy there was extensive bronchopneumonia of both lungs, with atelectasis and emphysematous areas between. In one case there was hemorrhagic nephritis from the general infection. The differential diagnosis from true croup may be made from the initial catarrh, which seldom occurs in true croup, from the absence of a pseudomembrane in the mouth and pharynx, and from the early appearance of symptoms of bronchopneumonia; but these are sometimes lacking. Moreover, we may have a true diphtheric membranous croup complicated by bronchopneumonia. The prognosis is serious. The treatment is that of bronchopneumonia. Diphtheria antitoxin may be given if there is any doubt about the diagnosis. The author has found intubation of great value.

In his first case the pronounced croup and râles heard over both lungs had all developed within a few hours, and the croupy stridor kept up unmodified till the child died the next day. Antitoxin had been given but without intubation or bacteriologic examination. Suñer was confident that the trouble was not primary laryngeal diphtheria, as the consultants assumed, but rather an extremely acute capillary bronchiolitis, and his further experience with other cases confirmed the fact that bronchopneumonia can develop occasionally like membranous croup. Inflammatory processes in the lower air passages are thus able to induce the signs of laryngeal diphtheria. Such cases run an unusually protracted course and are not modified by antitoxin, as in laryngeal diphtheria. In one case the croup developed after measles but subsided after two days under local moist heat to the larynx. One child of 2 had total obstruction of the larynx following a week of catarrhal trouble of the air passages. Antitoxin and intubation failed to relieve and no false membranes were discovered even at necropsy. In one of his cases necropsy showed diphtheria bacilli in a small clot in one bronchus, but no membranes, and the benefit from intubation testified to the involvement of the larynx in the

inflammation. The child of 3 was convalescing from measles when attacked by the bronchopneumonia. The bronchopneumonic false croup occurs exclusively in children, and without any morbid manifestations in the larynx. There is always a preliminary catarrhal affection of the upper or lower air passages or both, then a period of gradually increasing laryngeal stenosis, and then the period of suffocation unless relieved by intubation. There is generally fever through all the stages and signs of bronchopneumonia. The disease runs its course in from two to twenty days, averaging from ten to fourteen. Only two recovered in the six cases reported.

Medizinische Klinik, Berlin

December 13, X, No. 50, pp. 1781-1810

29 *War Wounds of the Lower Jaw. (Schussfrakturen des Unterkiefers und ihre Behandlung.) H. Schröder.
30 *Some Important Principles in Dietetics. (Die Ernährung des Soldaten im Felde.) O. Cohnheim.
31 War Wounds of the Eyes. (Augenverletzungen im Kriege und ihre Behandlung.) C. Adam.
32 Compound Fractures in War; Twelve Typical Cases. (Zur Kasuistik offener Knochenbrüche.) G. Nespor.
33 Early Operative Treatment of War Wounds of Peripheral Nerves. C. Becker.
34 *Dry Benzidin Test for Invisible Blood. (Die Blutprobe nach Artur Wagner.) M. A. Zengerle.

29. **Fracture of Lower Jaw.**—Schröder gives illustrations of the aluminum splints for the lower jaw of which he keeps a supply on hand at the front; also stout wire splints held in place by being tied to the teeth, but the greatest reliance is placed on hard rubber shells corresponding to the soft parts over the entire jaw. The fractured jaw is exposed and all devitalized tissue cut away. Then a corresponding piece of one of the rubber shells is cut out to fit the gap in the jaw and wired to the bone on the inside. He has frequently had the wounds heal by primary intention after treatment of this kind, even when half the jaw had been shot away. The patients can open and shut the mouth almost at once. A permanent prothesis can be substituted for the temporary device as soon as healing is complete, namely, in four or six weeks.

30. **Importance of Salt and Water for Normal Digestion.**—Cohnheim comments on the fact that the customs of eating in all lands, however diversified they may appear, yet have the one trait in common that the stomach is not left empty long. Another meal follows when the last has been finally all expelled from the stomach. This takes longer with certain articles of food than with others, but it depends mainly on the proportional amount of gastric juice secreted. The secretion of gastric juice also draws on the reserves of acid in the blood, he continues, and by this means the lactic acid accumulating in the blood, as it is generated in fatigued muscles, is drawn out of the blood to serve as a component of the gastric juice. This explains the promptly refreshing action of food taken when one is much fatigued. For this purpose it makes little difference what the food is; anything that "relishes" starts the secretion of gastric juice, and thus serves to relieve fatigue in this way. When fluid and salt are lost in profuse sweating, the gastric juice cannot be produced in normal amounts unless provision is made for ample intake of both fluid and salt. When the secretion of gastric juice is deficient, the stomach empties itself before digestion is complete, and the chyme is hurried along through the upper bowel, with diarrhea as the result. He emphasizes the above points with special reference to the troops in the field, reiterating the necessity for food that will stay long in the stomach, the necessity for ample intake of salt and water, and the danger of mistaking for dysentery a diarrhea which is merely the result of a deficit in gastric-juice production from lack of ingredients from which to make it.

34. **Dry Test for Occult Blood.**—Zengerle confirms the convenience and reliability of Wagner's modified benzidin test for invisible blood in the stools. (Wagner's description was summarized in THE JOURNAL, 1914, lxiii, pp. 519 and 1987.) A knife-tip of benzidin is mixed with 2 c.c. of glacial acetic acid and 20 drops of a 3 per cent. solution of hydrogen dioxid. A scrap of the stool is smeared on a dry slide lying on white paper. A drop of the above reagent is then poured on it, and if there is admixture of blood the tint changes at once to a pronounced blue.

Zengerle's experience confirms the reliability of the test not only for invisible blood in stools but in medicolegal investigation of traces of blood anywhere. His attention was attracted to the possibilities of the test in this line by finding two small blue spots on one of his fingers as he was compounding the above reagent. As if by magic he thus learned of the existence of two minute holes in the rubber gloves he had been wearing. Gauze and wool dipped in blood and then thoroughly washed with soap and hot water yet showed the characteristic blue reaction when a drop of the reagent fell on them. After a match dipped in blood had been charred to a coal, a scrap of the charcoal treated with the reagent changed its tint to bright blue, as also ash from another blood-stained match. Milk and rust do not change the tint; ferric chlorid causes a black discoloration. Pus yielded the blue tint in his tests, but there may have been traces of blood in the pus.

Monatsschrift für Geburtshülfe und Gynäkologie, Berlin

December, XL, No. 6, pp. 633-708

35 Rupture of the Intestine from Contusion during Pregnancy. (Darmruptur durch stumpfe Gewalt bei Gravidität.) J. A. Amann.
36* Diagnosis and Prognosis of Kidney Changes in Pregnancy. (Nierenveränderungen in der Schwangerschaft.) P. Wolff and M. Zade.
37 *The Stem-Pessary. (Der intrauterine Stift.) A. Martin.
38 Importance of Colostrum in the Nutrition of the New-Born. (Ernährungsverhältnisse Neugeborener.) G. Benestad.

36. **Kidney Changes in Pregnancy.**—Wolff and Zade say that among their 3,477 deliveries, 1909 to 1913, there were 106 cases of severe disturbance of kidney function, that is, in about 3 per cent. In 52 of the cases there was eclampsia; in 21 kidney disease arising during the pregnancy and caused by it; in 31 chronic nephritis, and there were 2 cases that could not be definitely classified. Most of the cases of eclampsia were in primiparae, as also a slight majority of the cases of *nephropathia e graviditate*, but the majority of the cases of chronic nephritis were in multiparae. Wolff and Zade conclude that with our present methods of examination the different forms of kidney disease during pregnancy cannot always be distinguished with certainty. During the puerperium, and later, chronic nephritis may develop from the kidney trouble started by the pregnancy or left by eclampsia. There is a predisposition to recurrence of *nephropathia e graviditate* in later pregnancies. Albuminuric retinitis may be observed in pure kidney affections and in eclampsia. In chronic nephritis during pregnancy, albuminuric retinitis has not the bad prognosis that it has if occurring outside of pregnancy. The retinitis may be caused by a kidney disturbance superposed on the chronic nephritis, and may disappear with the former at the end of the pregnancy.

37. **The Stem-Pessary.**—The stem-pessary has fallen into disrepute but Martin believes that it has a legitimate use in certain cases of amenorrhea and oligomenorrhea, especially those caused by infantile development of the uterus. He has had excellent results in such cases and has never seen any harm from its use if strict asepsis was observed.

Münchener medizinische Wochenschrift, Munich

December 8, LXI, No. 49, pp. 2333-2364

39 Operative and Radiotherapy of Benign and Malignant Tumors of the Uterus. (Geschwülste der Gebärmutter.) H. Fehling.
40 Distribution in the Body of Injected Cholin. P. Ellinger.
41 Influence of Oxidation and Reduction on Salvarsanized Serum. (Einfluss von Oxydation und Reduktion auf die Wirkungsstärke des Salvarsanserums.) A. Stühmer.
42 Sterilization of Solutions of Morphin. E. Deussen.
43 *Social-Economic Importance of the After-Care of the Wounded. (Die volkswirtschaftliche Bedeutung der Nachbehandlung Kriegsverletzter.) K. Grassmann.
44 Inhibiting Influence of Copper Salts on Growth of Tubercle Bacillus. (Die entwicklungshemmende Wirkung der Kupfersalze auf das Wachstum des Tuberkelbazillus.) Gräfin v. Linden.
45 Abdominal Wounds in War. (Zur Prognose und Therapie der Bauchschüsse.) J. Rotter.
46 Asepsis in the Field Hospital. W. Hannes.
47 Wounds of the Nerves. G. Hohmann.
48 Wounds of the Jaws. (Schussverletzungen der Kiefer und ihre Behandlung.) J. Steinkamm.

49 *Urochromogen Differential Test for Typhoid. (Zur Typhusdiagnose im Felde.) M. Rhein.
50 Dry Culture Media for Differential Diagnosis of Typhoid and Dysentery. J. Morgenroth.
51 Advantages of Bolus Alba in Treatment of Paratyphoid. v. Wilucki.
52 *Advantages of Aluminum Acetate for Local Treatment of Pyocyaneus Processes. K. Bollag.
53 Technic for Plaster Casts and Dressings. Trumpff, F. Noll and A. Most.
54 The Food Supply and Expense during the War. II. (Die Ernährung der deutschen Zivilbevölkerung im Krieg.) v. Müller, Hecht and Others.

43. **Crippled Veterans After the War.**—Grassmann comments on the fact that the wounded either die at once or recover, as a rule, so that there will be an exceptionally large proportion of cripples left after this war in comparison with others in which infection decimated the wounded. He urges physicians everywhere to bear in mind the ultimate restoration of the earning capacity, and to bring everything to bear that will ward off crippling deformity. A few thousand dollars spent now to equip institutions in which passive and active exercise can be taken under medical supervision may save thousands from becoming dependent cripples, restoring them to active life.

49. **Simple Differential Diagnosis of Typhoid.**—Rhein regards the diazo reaction as an important aid in differentiating typhoid. The ordinary diazo test is rather complicated, but the urochromogen reaction is practically as instructive, while this requires only from three to ten drops of a 1 per thousand potassium permanganate solution added to urine diluted one-half. (It was described in THE JOURNAL, 1914, lxii, 886.) Rhein has found that the outcome is equally reliable if merely one crystal of the permanganate is dissolved in the diluted urine in a test-tube. The yellow tint appears at once as the crystal dissolves in the test-tube as it is shaken.

52. **Treatment of Pyocyaneus Infection.**—Bollag has found nothing better than a 2 per cent. solution of liquor of aluminum acetate, with which the dressings are impregnated, in treatment of wounds infected with the *Bacillus pyocyaneus*. This arrests its growth and clears the wound, and gives it a chance for healthy granulations.

Wiener klinische Wochenschrift, Vienna

December 10, XXVII, No. 50, pp. 1583-1608

55 *Cholera. O. Buiwid, L. Arzt and E. Wiener.
56 Staining Technic for Blood and Lymph Vessel Tissues. (Zur Untersuchung der hämolymphatischen Gewebe mittels der spezifischen Blutfarbungen.) C. Gamna.
57 Wounds of the Skull in War. (Beitrag zu den Schädelverletzungen im Kriege.) H. v. Haberer. Commenced in No. 49.

55. **Cholera in Cracow District.**—Buiwid and Arzt maintain that cholera is easier to keep under control than any other epidemic disease. The first case was found in the Cracow district October 27, but soon twenty trains arrived bringing not only many more cases of cholera but thousands of persons who had been exposed to it. The exposed, to the number of 14,000, were quartered in a separate village and the disease did not spread. Only twenty new cases developed in the entire district and the nine survivors were not left carriers. The mortality among the 176 cholera patients in the isolation hospital was between 24 and 30 per cent. Anticholera vaccination was applied on a large scale and no untoward by-effects were observed and only three among the thousands vaccinated developed cramps in the legs during the first few days afterward and two others had fleeting urticaria.

Wiener has had extensive experience with cholera in Africa and Asia and calls attention to certain symptoms on the part of the nervous and vascular systems and the skin which are seldom mentioned in the text-books, such as the cramps in the upper arm, keeping the elbow at an acute angle, and the predilection for the knee-elbow position. He never knew a patient to recover who had these symptoms. Symmetrical pains in the toes or limbs, congestion of the conjunctiva, and trophic disturbances in the legs were also common. He reports that not another case of cholera developed by the sixth day after anticholera vaccination of 28,000 persons at Keryermezo, in which there was a camp of prisoners and an isolation hospital in his charge. His experience confirms the value of infusion of hypertonic salt solution, but he prefers for a drink a 1 or 3 per thousand solution of hydrogen dioxid, rather than of potassium permanganate as Rogers recommends.

Zentralblatt für Chirurgie, Leipzig

December 12, XLI, No. 50, pp. 1745-1760

58 Hematomas Simulating Aneurysm. (Zur Operation der sogen. falschen Aneurysmen.) F. Oehlecker.

Zentralblatt für Gynäkologie, Leipzig

December 12, XXXVIII, No. 50, pp. 1481-1496

59 Safe Method of Access to Bladder with Hysterectomy for Prolapse of the Uterus. L. A. Oliva.

Gazzetta degli Ospedali e delle Cliniche, Milan

December 17, XXXV, No. 135, pp. 2085-3000

60 Inhalation of Carbon Dioxid Increases Uric Acid Content of Blood of Dogs. (Inalazione d'anitride carbonica e acido urico nel sangue.) L. Preti.
61 *Epidemic of Three-day Fever and Gnat Extermination in Prophylaxis. W. Zannini.

December 20, No. 136, pp. 3001-3016

62 Importance of Calcium in Treatment of Bone and Joint Tuberculosis. (Ipercalcificazione e tubercolosi chirurgiche.) T. Silvestri.
63 *Emetin in Treatment of Hemoptysis. (Valore del chloridrato d'emetina nel trattamento dell'emottisi tubercolari.) B. Nicola.

61. **Three-Day Fever.**—Zannini states that in his province in northern Italy there has been a recent epidemic of this disease, nearly all in men, no children. The symptoms are a suddenly developing fever, from 39 to 41 C. (102 to 105.8 F.) intense headache, with localized and general pains, insomnia, congestion in the conjunctiva and pharynx, and in about a third of the cases bradycardia and leukopeny. The fever subsides after three days but great weakness is left and in a few instances there was some mental confusion for a time. This infection has been proved to be transmitted by the bite of a nocturnal gnat, *Phlebotomus pappatasii*. Quinin and tonics are the reliance in treatment. The same principles should be applied in prophylaxis as for malaria.

63. **Emetin in Treatment of Tuberculous Hemoptysis.**—Nicola reports twenty-one cases of hemoptysis in tuberculous patients all treated by subcutaneous injection of about 0.04 gm. of emetin, repeated after an interval of twelve hours; in some of the cases the first injection was 0.06 gm. and the second was 0.04, with an interval of only three hours. In one case 0.32 gm. of emetin was given fractioned in thirty-four hours without result. In another, four injections of 0.06 gm. within twenty-four hours finally conquered the tendency to hemoptysis. Analysis of the various cases teaches that a good result can be counted on only when the hemoptysis occurs in the early stages of tuberculosis, and there is not much loss of blood, or in the cases with high blood-pressure and unstable vasomotor system. In all his cases of this kind the tendency to hemorrhage was definitely arrested by the emetin in from ten to forty-eight hours. On the other hand, when the hemorrhage was the result of passive venous congestion or of an ulcerative process with abnormally low blood-pressure, emetin not only failed to arrest the hemoptysis but induced symptoms of mild toxic action when the dosage was pushed.

Policlinico, Rome

December 20, XXI, No. 51, pp. 1777-1812

64 Sterilization of Vaccine with Ether. (Sulla depurazione rapida della linfa vaccinica mediante vapori di etere solforico.) G. Roseo.
65 Phenol in Treatment of Tetanus. (Tetano guarito col metodo di cura Baccelli.) V. Cagnetta and Others.

December, Medical Section, No. 12, pp. 533-580

66 Pathogenesis of Lead Colic. E. Tedeschi.
67 *Permeability of Infant Intestine for Casein of Cow's Milk. E. Modigliani and R. Benini.
68 Reliability of Phenolsulphonephthalein Test of Renal Function. (Studio della capacita funzionale del rene.) L. Pezzana.
69 Causes of Error in Determination of Proteins in the Urine. (Di un reperto singolare, come contributo alla conoscenza della cause di errore nella ricerca della proteine nell'urina.) E. Cavazanni.
70 *Sulphur Reaction in the Urine with Cancer. (Del comportamento del solfo organico urinario nei tumori maligni. Reazione di Salomon-Saxl.) M. Capella.

67. **Permeability of Infant's Intestine for Cow's Casein.**—Modigliani and Benini tested the blood for protective ferments, using for the test the serum from rabbits treated by repeated parenteral injections of casein from cow's milk. In time their serum acquired casein-precipitating properties. Applying this biologic-test technic they obtained a positive response every time with serum from bottle-fed infants showing symptoms of gastro-intestinal disturbance on cow's milk. Positive findings were obtained also in sick new-born babies given a little cow's milk. In older, breast-fed infants with acute intestinal disturbance, the response was negative when they had been given a little cow's milk. Healthy infants at any age never gave a positive response. The experiences reported demonstrate the specific nature of the reaction and that the intestines become permeable for the casein in abnormal conditions of various kinds. They suggest further that the alien casein thus getting into the circulation may do much damage in different ways, especially on the liver.

70. **The Sulphur Reaction in the Urine with Cancer.**—Capella applied the Salomon-Saxl test in twenty-one cases of certain cancer, eleven with various other affections, and five healthy controls. (The technic was described in THE JOURNAL, 1912, lix, p. 738.) He obtained a positive response in only 48 per cent. of the cancer cases, so he thinks the test is of comparatively little differential value.

Riforma Medica, Naples

December 19, XXX, No. 51, pp. 1401-1428

71 Pain in the Peritoneum and Pain in the Intestines. (Dolore peritoneale e dolore intestinale.) G. A. Pari.

72 Tonsil Extract in Therapeutics. (L'opoterapia tonsillare nel diabete mellito.) C. B. Farmachidis and A. Vattuone.

73 *Lead Meningitis. (Meningite asettica di origine saturnina.) L. Preti.

73. **Lead Meningitis.**—Preti was treating a painter for his ninth attack of lead colic, which soon subsided under hot baths, pilocarpin, etc., but was followed by paresis of the legs, which also gradually subsided in a couple of weeks. Ten days afterward various joints and muscles became painful and in the course of a few days fever developed suddenly, with intense headache, pain in the back of the neck, the Kernig sign, Cheyne-Stokes breathing, and other signs of severe acute meningitis, the patient finally becoming unconscious. The cerebrospinal fluid was under high pressure but sterile. The patient recovered consciousness after 25 c.c. of the fluid had been withdrawn, and recovery proceeded rapidly. Nearly all the symptoms had disappeared by the end of the week. About 20 c.c. of fluid was then withdrawn by lumbar puncture. It was still under considerable pressure, but the specific gravity had dropped from 1.010 to 1.004, the albumin from 0.5 per cent. to traces, and the former traces of sugar had almost disappeared. Culture media and animals inoculated anew confirmed the aseptic character of the meningitis. Leukocytes were found in the fluid each time but they were of normal shape and aspect.

Brazil-Medico, Rio de Janeiro

November 22, XXVIII, No. 44, pp. 405-412

74 *False Tabes Dorsalis of Malarial Origin. (Casos de pseudo-tabes palustre. Notas para o seu diagnostico differencial. Pathogenia.) A. A. Da Matta. Commenced in No. 41.

74. **Tabes of Malarial Origin.**—Da Matta describes some cases of polyneuritis and tabes due exclusively to chronic malaria. Differentiation is possible by examining the blood and urine, and the clinical course. With the malarial false tabes there is none of the changes in the heart and respiration pathognomonic of beriberi. The presence of urobilin in the urine also speaks for a malarial origin. Under vigorous quinin treatment, the nerves recuperate from the action of the toxins that the malaria germs have been generating and a complete cure is possible.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

II, No. 10, pp. 589-656

75 Red Blood Corpuscles in the Urine of Normal Persons. J. E. Schulte and F. J. L. Woltring.

No. 11, pp. 657-724

76 Segmental Anatomy. (Over dermatomerie.) B. Brouwer. Concluded in No. 12.

77 The Cammidge Reaction. H. J. Lameris and C. J. C. van Hoogenhuyze.

No. 12, pp. 725-804

78 Bananas in Dietetic Treatment. (Bananen in het dieet bij darmaandoeningen.) C. D. de Langen.

79 Properties of the Cancer Cell. P. G. J. Duker.

Hospitalstidende, Copenhagen

December 23, LVII, No. 51, pp. 1489-1520

80 Production of Uric Acid in Man. IV. (Urinsyrens Dannelse hos Mennesket.) I. P. Chrom.

Nordisches medizinisches Archiv, Stockholm

XLVI, Internal Medicine, No. 3. Last indexed April 25, 1914, p. 1370

81 *Formation of Uric Acid in Man. III. (Bildung der Harnsäure beim Menschen.) J. P. Chrom.

81. **Production of Uric Acid.**—To show the practical importance of the research reported, Chrom relates that ten years ago he had a patient, a married woman of 55, who for thirty-five years had suffered from depression, headache and insomnia with, latterly, hallucinations and sensations of oppression. She had tried all kinds of treatment to no avail. Her appetite and bowel functioning were good and nothing objective could be found except an unusual amount of uric-acid crystals in the urine. This started him to investigate the mechanism of the production of uric acid and the ratio between the H_2SO_4 and the æ-H_2SO_4. He found it remarkably low, not over 4-1. Under suitable dietetic measures he succeeded in raising this ratio to 7-1, and as he accomplished this all her symptoms disappeared. He never got the ratio above 9-1, but she has been in perfect health during the last few years. The ratio at the last examination was 6.3-1.

He has apparently established that this ratio between one-half of the amount of uric acid and the total amount of the ethereal sulphates is proportional to the ratio between their molecular values. He produces evidence to show that as the conjugated sulphates are formed, the normal transformation of uric acid is interfered with and in such a way that the uric acid becomes refractory to the oxidation processes in the body, and the organism has to cast it out unoxidized. If oxalic acid is supplied to the organism, this splits the uric acid so that it becomes oxidizable. Other substances which seem to act in the same way are volatile fatty acids, and the livelier the putrefaction processes going on in the intestines, the more fatty acids are generated. Tables are given showing under seventeen headings the metabolic findings during two months on a special ration; first rye bread and margarin and then with prunes, potato and sugar. Other tables show the findings with other rations, but all seem to confirm his conception of the mechanism of the production of uric acid, namely, that the fatty acids are instrumental in splitting the uric acid in such a way that it can be oxidized. The ratio index ran up highest when cauliflower was eaten daily for a week, reaching 16.2-1. The next highest ratio was on a diet of 2,400 gm. purées; 450 gm. white bread; 180 gm. margarin; ½ liter milk; 360 gm. tea, and 360 gm. coffee. A high ratio was also evident on a diet of 900 gm. white bread; 150 gm. margarin; ½ liter milk; 260 gm. tea, and 360 gm. coffee. The ratio averaged lowest on a diet of nothing but 1,000 gm. fine white bread and 125 gm. margarin.

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November 19, LXXVI, No. 47, pp. 2007-2038

82 A Case of Pemphigus Vegetans. A. Kissmeyer.

December 17, No. 51, pp. 2145-2176

83 *Ultimate Outcome of Traumatic Neuroses. (Om traumatiske Neuroser og deres senere Forløbsamt om deres Forhold til Erstatningsspørgsmaalet.) A. V. Neel. Concluded in No. 52.

83. **Traumatic Neuroses.**—Neel reviews the experiences of accident insurance societies in 189 cases of traumatic neuroses. The trauma had injured the head in sixty-eight cases but in 106 there did not seem to be any organic injury and the traumatic hysteria was due in large part to the indemnity factor. In fifteen cases there were actual neurasthenic neuroses, mostly the result of fright, and this group, he declares, is all that should strictly be called traumatic neuroses.